



Hometown People. Hometown Power.

Lansing Board of Water & Light
2019 Annual Water Quality Report





Lansing Board of Water & Light continues to meet or exceed all water quality standards established by the U.S. Environmental Protection Agency (EPA) and the Michigan Department of Environment, Great Lakes, and Energy (EGLE)

We are pleased to present the 22nd annual report summarizing the quality of the drinking water provided to you by the Lansing Board of Water & Light (BWL) for the 2019 calendar year. This Consumer Confidence Report is required by the Federal and State of Michigan Safe Drinking Water Acts (SDWA). This report discusses the source of your tap water, the results of tests we regularly conduct to assure the quality of your water and additional information you may wish to know about your drinking water.

As a publicly-owned utility, the BWL encourages public interest and participation in decisions affecting the community's drinking water. The BWL's Board of Commissioners meet on the fourth Tuesday of every other month at our REO Town Depot Facility, 1201 S. Washington Avenue in Lansing. Meeting dates and times are published in advance and may be found on the BWL's website or by calling us at 517-702-6006. Our board meetings are open to the public.

Dear Customer,

These are unprecedented times and the coronavirus (COVID-19) has caused a disruption in many of our lives, pushing us to take every precaution to ensure ourselves, and our loved ones, remain safe and healthy. The BWL remains committed to providing our customers safe, affordable and reliable services and has taken extra measures to keep a healthy workforce to ensure the reliability in our products. At a time of uncertainty, knowing you have power to your homes, and safe drinking water is essential. The EPA has released information that the COVID-19 has not been detected in drinking water and standard water treatment, including disinfection and filtration, is effective at inactivating the virus. The BWL continues to monitor our water supply during this situation and BWL tap water can be consumed as normal.

The safety and quality of our drinking water is always a top concern, but over the last several years water quality has gained much attention. To ensure the BWL continues to provide the best water to our customers, we are continually evaluating our water distribution system. This year you may notice a few changes. The BWL is adjusting the water supply to areas of our system to reduce water age. We will be performing hydrant flushing of our system from April until October to flush sediment and potential stagnant water from areas, and we are replacing several older water mains. In support of our environmental stewardship efforts, we are also conducting a pilot program on new equipment that allows cleaning of main sections without additional water waste.

The BWL takes great pride in our water. We believe our customers deserve the best, and these are just a few ways we are working to do that. The BWL is confident in our water, and will continue to take steps to maintain great quality and spread the word about the benefits of drinking from the tap.

Sincerely,

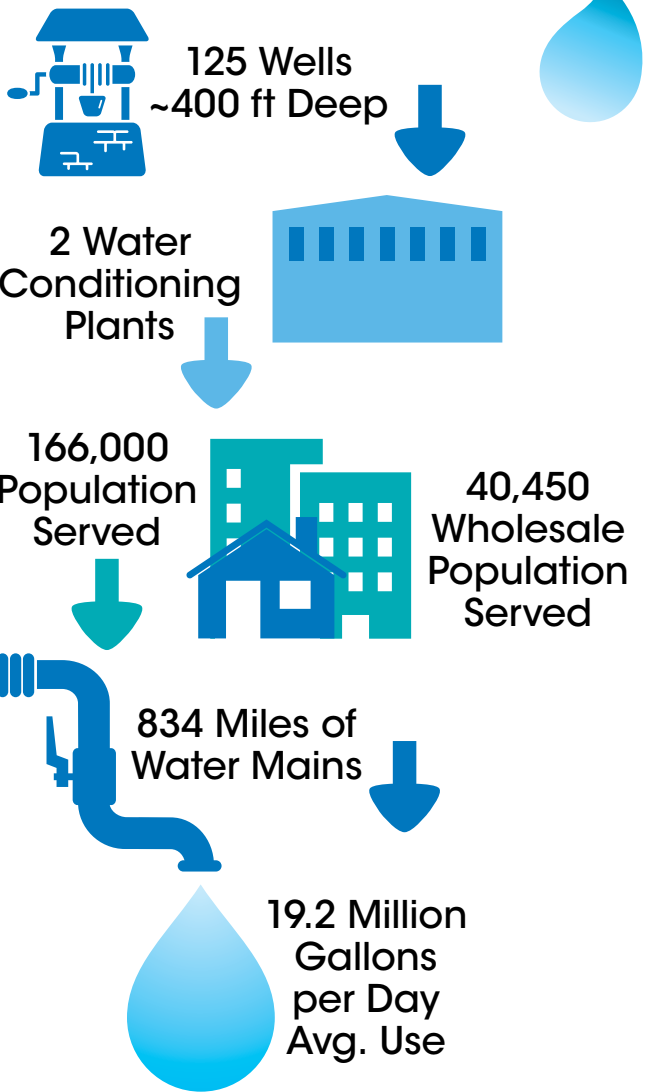
Water Quality Administrator

About Us

The BWL was established in 1885 by a vote of the people of Lansing to fund a publicly owned utility to meet their need for adequate fire protection, proper sanitation and improved street lighting for the city. The Lansing community and the BWL service territory have been very fortunate to be located over the center of the Saginaw Aquifer, which has been called one of the finest natural sources of groundwater ever discovered.



BWL Water comes from the Saginaw Aquifer



Recognitions

In 2018, the BWL was presented with the Michigan Section American Water Works Association Research & Treatment Practices award for our Lead Service Line Replacement Program.

In 2016, the BWL received Michigan American Water Works Association award for Exemplary Wellhead Protection Program Award for Large-Sized Systems.

In 2014, the John F. Dye Water Conditioning Plant was recognized as a National Waterworks Landmark by the American Water Works Association and the Plant was also presented with a Clean Corporate Citizen Award by EGLE for its environmental stewardship.

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Water Source

BWL drinking water comes from 125 groundwater wells that are approximately 400 feet deep. The source of this plentiful supply is an underground aquifer, which underlies much of the mid-Michigan region. Water from BWL wells is transported through large transmission mains to one of two water conditioning plants.

The plants soften the water by removing about 80 percent of the hardness. The softened water is then disinfected, fluoridated, treated with corrosion control, filtered and stored in reservoirs for distribution to customers. Lansing is one of the largest communities in the country to rely exclusively on groundwater to meet its drinking water requirements.

Protect Your Water Supply



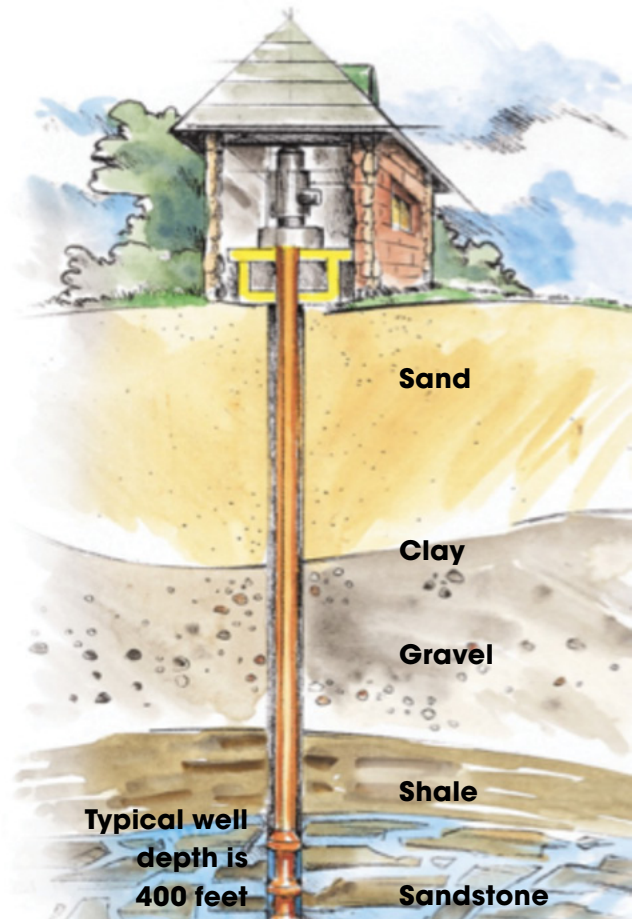
The BWL actively supports regional wellhead protection activities and has an award-winning Wellhead Protection Program. The United States Geological Survey has developed a regional aquifer computer model of the

mid-Michigan area that provides important information about the groundwater supplies. Major support for the project was provided through a state-administered wellhead protection grant to the BWL.

Lansing's drinking water source is largely protected from contamination or direct contact with surface waters by layers of clay and shale. There are areas at the surface, however, that directly contribute to the aquifer without the protection of clay and shale layers.

In 2003, EGLE assessed the vulnerability of the aquifer to impacts from human activities. Because there are several known and potential sources of contamination in and near the BWL's wellhead protection areas, the aquifer in this region has been assessed as "highly susceptible" to contamination. If you desire more information on this local Source Water Assessment, contact Angie Goodman at 517-702-7059 or angie.goodman@lbwl.com.

Actions taken on the surface can impact the groundwater we drink.



Help protect this essential resource.

- **Waste Disposal:** Properly dispose of waste such as gasolines, oils, pesticides, paints and antifreeze. Toxic substances poured/spilled on the ground or down a drain can contaminate the water you drink.
- **Never Flush:** Many items containing toxins are non-biodegradable. They clog pipes, destroy protective bacteria and wreak havoc at the Wastewater Treatment Plant. For a complete list, visit epa.gov/septic.
- **Medications:** Prescription and over-the-counter drugs are NOT safe to flush. They break down in the water and wastewater treatment plants. Treatment plants are not equipped to remove them, and they end up back in our water supply. Visit Michigan.gov/egledrugdisposal to find a place to dispose of them properly.
- **Conserve:** Saving water reduces energy costs and helps keep more water in our lakes, rivers and groundwater supply.

How to Read the Water Quality Data Tables

The BWL conducts frequent tests of the water and the following tables list parameters, even in the smallest traces, which may be associated with health, aesthetics or no established standards. Drinking water may reasonably be expected to contain at least small amounts of some parameters and this does not necessarily indicate a health risk. These tables contain the name, the highest level allowed if regulated, the ideal goals for public health if established, the amount detected and the usual sources of such parameter. The tables do not list the hundreds of parameters for which the BWL tested but did not detect a presence.

Unless otherwise noted, the data presented in this table is from testing done January 1 – December 31, 2019. The BWL can monitor for certain parameters less often than once per year because the concentrations are not expected to vary significantly from year to year. While all the data are representative of the BWL's water quality, some results are more than one year old.

Key to Tables

AL	Action Level: TThe concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
L1	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.
L2	Level 2 Assessment: A very detailed study of the water system 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.
MCL	Maximum Contaminant Level: TThe 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: TThe 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: TThe highest level of a disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant is necessary for control of microbial contaminants.
MRDLG	Maximum Residual Disinfectant Level Goal: TThe level of a disinfectant in drinking water 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 contamination.
N/A	Not Applicable
ND	Not detectable at testing limit
pCi/L	Picocuries per liter (a measure of radioactivity)
PPB	Parts Per Billion , or micrograms per liter (ug/l) (equivalent to one penny in \$10,000,000).
PPM	Parts Per Million , or milligrams per liter (mg/l) (equivalent to one penny in \$10,000).

Substances Measured in the Distribution System

Total Coliform Bacteria

As referenced by the EPA, total coliforms are a group of related bacteria that are (with few exceptions) not harmful to humans. A variety of bacteria, parasites and viruses, known as pathogens, can potentially cause health problems if humans ingest them. The EPA considers total coliforms a useful indicator of pathogens, such as E.coli, for drinking water. Total coliforms are used to determine the adequacy of water treatment and the integrity of the distribution system.

<https://www.epa.gov/dwreginfo/revised-total-coliform-rule-and-total-coliform-rule>

Microbial Contaminants	Number Detected	L1 Assessment Triggered?	L2 Assessment Triggered?	Major Sources	Violation?
Total Coliform Bacteria	2	No	No	Naturally present in the environment	No
E. coli	0	No	No	Human or animal fecal waste	No

Important Information about Your Drinking Water

Monitoring Requirements Not Met for the Lansing Board of Water & Light

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During November 1, 2019, to November 30, 2019, we did not complete all monitoring or testing for total coliform and, therefore, cannot be sure of the quality of our drinking water during that time.

We feel confident this monitoring violation did not pose a safety risk, however as our customers, you have a right to know what happened, what you should do and what we have done to correct this situation.

What should I do? There is nothing you need to do. This is not an emergency and the situation has been corrected.

What happened? What is being done?

The BWL is required to collect a total of 120 samples per month from our distribution system. We inadvertently miscounted the number of samples we collected and only collected 110 samples. The 110 samples collected throughout the month were negative for total coliform. We collected samples every day leaving our water conditioning plants for total coliform and they, too, were negative. We are making every effort to ensure this does not happen again. We returned to compliance on December 26, 2019 when all required samples were collected.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

For more information, please contact Angie Goodman, Water Quality Administrator 517-702-7059 or angie.goodman@lbwl.com.

Disinfectants and Disinfection By-Products

The BWL adds chloramine to its water at the conditioning plants to protect against bacterial growth. Chloramine is used instead of other disinfectant options because it minimizes the number and level of chlorination byproducts, persists longer in the distribution system and leaves little or no unpleasant odor and taste. The following table lists the chloramine levels and disinfection byproducts created by the reaction of our chloramine treatment and naturally occurring organic compounds.

Regulated Contaminant	Unit	MCL	MCLG	Highest Average Detected Level	Range of Detected Levels	Major Sources	Violation?
Haloacetic Acids (HAA5)	PPB	60	N/A	2.2	1.2 to 2.5	By-product of drinking water disinfection	No
Total Trihalomethanes (TTHMs)	PPB	80	N/A	3.2	2.9 to 3.5	By-product of drinking water disinfection	No
Chloramines	PPM	MRDL 4	MRDLG 4	1.7	0.37 to 2.6	Water additive to control microbes	No

Substances Measured at the Water Conditioning Plant

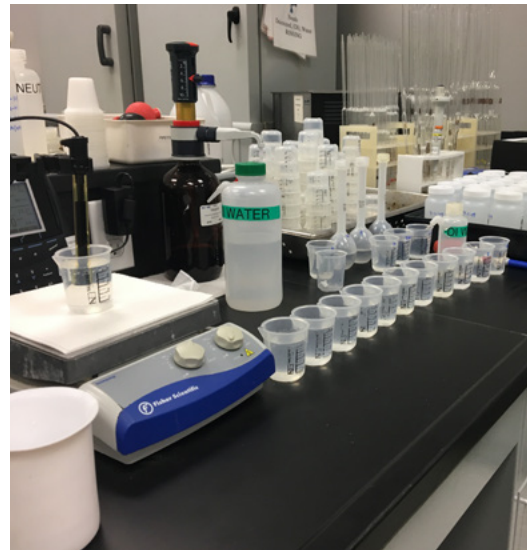
Regulated Contaminant	Unit	MCL	MCLG	Highest Detected Level	Range	Date Tested	Major Sources	Violation?
Barium	PPM	2	2	0.022	0.015 to 0.022	7/25/12	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.	No
Fluoride	PPM	4	4	0.72	0.72 to 0.72	7/3/19	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.	No

Fluoride

The raw water coming into the BWL's two water conditioning plants has a naturally occurring level of fluoride of approximately 0.35 ppm. The BWL adds fluoride to the water to bring it to the optimal level of 0.7 ppm recommended by the Center for Disease Control and Prevention and the U.S. Public Health Service and approved by the EPA.

As stated on the www.CDC.gov/fluoridation/safety website, the "CDC monitors the public health benefits and risks of community water fluoridation from studies published by panels of experts from health and scientific fields. These reviews, conducted over many years, have concluded that water fluoridation is both safe and effective."

Further information about fluoride in drinking water, including specific information about infants, can be obtained from the CDC website at www.cdc.gov/fluoridation



Radioactive Contaminant	Unit	MCL	MCLG	Highest Detected Level	Range	Date Tested	Major Sources	Violation?
Radium 226 and 228	pCi/L	5	0	1.95±0.44	0.84±0.51 to 1.95±0.44	7/7/16	Erosion of natural deposits.	No

Special Monitoring (Not Regulated)	Unit	MCL	Highest Detected Level	Range	Date Tested	Major Sources	Violation?
Sodium	PPM	Not Established	89	65-89	7/3/19	Natural constituent of groundwater.	N/A

How the BWL is Reducing Exposure to Lead in Drinking Water

The BWL follows a two-part strategy to protect its residential and commercial customers from exposure to lead leaching into drinking water. First, in December 2016, the BWL replaced its last active lead service line, joining Madison, Wisconsin as the second water utility in the nation to have removed all lead service lines. The project began in 2004 and removed 12,150 active lead service lines at a cost of \$44.5 million. The BWL replaced the connection from the water main to the meter, which the BWL owns, at a home or business.



Secondly, the BWL uses a corrosion control additive to create a protective coating in the water mains, service lines and indoor plumbing. To assure that these strategies are effective, the BWL conducts daily monitoring at the plant for corrosion control concentrations and periodic monitoring in the distribution system for corrosion control and lead and copper in the drinking water. These are just a few of the many tests performed by the BWL to assure that its water remains safe.

The BWL's compliance monitoring is every three years for lead and copper and was last sampled in June 2017. The BWL will conduct compliance sampling between June 1 and September 30, 2020.

Contaminant Subject to AL	Unit	AL	MCLG	9 out of 10 homes were below a level of:	# of samples above the action level:	Range of Individual Sample Results:	Major Sources	Violation?
Copper	PPM	*1.3 at 90th percentile	1.3	0	0	0.0013 to 0.037	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.	No
Lead	PPB	**15 at 90th percentile	0	1.1	0	0 to 1.7	Corrosion of household plumbing systems; Erosion of natural deposits.	No

Water Quality Table Footnotes:

* 9 out of 10 homes tested must show a concentration equal to or lower than 1.3 parts per million

** 9 out of 10 homes tested must show a concentration equal to or lower than 15 parts per billion

Important Information About Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water comes primarily from materials and components associated with water service lines and home plumbing. The BWL 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 (800-426-4791) or at <http://water.epa.gov/drink/info/lead/index.cfm>



Is There Lead in My Water?

There is no detectable lead in BWL drinking water when it leaves our conditioning plants. However, since water is naturally corrosive, small amounts of lead can dissolve into your drinking water if your water sits for several hours in contact with household plumbing fixtures, solder or faucets. The corrosion control additive the BWL uses creates a protective coating to reduce or eliminate the risk of exposure, but the EPA recommends additional steps you can take.

Reduce Your Exposure To Lead



Use only cold water for drinking, cooking and making baby formula. *Boiling water does not remove lead from water.*



Regularly clean your faucet's screen (also known as an aerator).



Consider using a water filter certified to remove lead and know when it's time to replace the filter.



Before drinking, flush your pipes by running your tap, taking a shower, doing laundry or a load of dishes.

To find out for certain if you have lead in drinking water, **have your water tested.**

Arrangements can be made for water testing through the Ingham County Health Department at 517-887-4312 and each test costs about \$20.

Identify Other Lead Sources In Your Home

Lead in homes can also come from sources other than water. If you live in a home built before 1978, you may want to have your paint tested for lead. **Consider contacting your doctor to have your children tested if you are concerned about lead exposure.**



For more information, visit: epa.gov/safewater

For more information about lead, please visit lbwl.com/water

Typical Analysis of Conditioned Water

The BWL performs an average of 16,000 water quality tests per year. This table represents results of typical concentrations and ranges of other parameters present in your water supply. These results are within acceptable ranges. The results can vary depending on the wells that are in use, the time of the year and the different areas of the water distribution system. For a PDF version of this list, please visit the BWL website at lbwl.com/water and click the *Typical Analysis of Conditioned Water*.

Parameter	Units	Your Water Results	
		Typical Concentration	Range
Calcium (as CaCO ₃)	PPM	57	40-70
Magnesium (as CaCO ₃)	PPM	42	33-58
Hardness* (as CaCO ₃)	PPM	99	86-110
Carbonate (as CaCO ₃)	PPM	22	17-27
Bicarbonate (as CaCO ₃)	PPM	16	13-23
Total Alkalinity (as CaCO ₃)	PPM	35	31-51
Iron*	PPM	0.1	0.1-0.7
Sulfate*	PPM	109	82-170
Chloride*	PPM	70	49-100
Phosphate, Ortho (as P)	PPM	0.3	0.2-0.4
pH	pH units	9.2	9.0-9.8
Total Dissolved Solids	PPM	275	250-300
Conductivity*	uS/cm	574	500-650

*These parameters will typically be at the high end of the range during high demand periods in the summer months of June, July and August.

Unregulated Contaminants

Unregulated contaminants do not have an MCL or MCLG but are reported to and evaluated by EGLE and EPA. Monitoring helps the EPA determine which areas of the country these contaminants are being detected and to develop future regulations. As our customers, you may request the results of our tests by contacting Angie Goodman at 517-702-7059 or angie.goodman@lbwl.com.

The BWL monitored for 1,4-Dioxane, at the entry point to the distribution system in 2015 and it was detected at trace levels at our Dye Water Conditioning Plant (less than 0.2 ppb). The EPA has established a lifetime health advisory level of 200 ug/L (or ppb), and the EGLE established an action level of 7.2 ppb (consistent with the Part 201 Residential Drinking Water Cleanup Criterion). The BWL continues to monitor 1,4-Dioxane quarterly at our Dye Water Conditioning Plant so we can respond accordingly if needed.

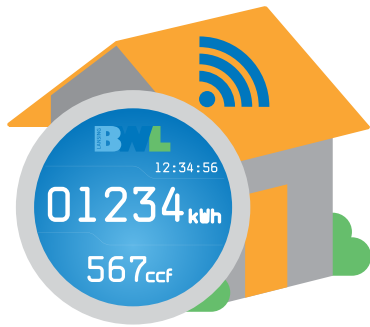
The BWL monitors for Perfluorinated Compounds (PFAS), which included PFOS and PFOA, at the entry point to the distribution system annually and no PFAS has been detected.

For additional information on Contaminants of Emerging Concern, visit lbwl.com/customers/water-resource-center/contaminants-emerging-concern

Unregulated Contaminant Monitoring Rule 3 That Were Detected

Unregulated Contaminants	Unit	Average Detected Level	Range	Date Tested	Major Sources
Chromium	PPB	0.2	0.2-0.3	Feb & Aug 2015	Natural constituent of groundwater
Molybdenum	PPB	1.1	0-1.2	Feb & Aug 2015	Industrial activities; naturally occurring sources
Strontium	PPB	166	120-210	Feb & Aug 2015	Industrial activities; naturally occurring sources
Vanadium	PPB	0.3	0.2-0.4	Feb & Aug 2015	Industrial activities; naturally occurring sources
Chromium Hexavalent	PPB	0.2	0.14-0.24	Feb & Aug 2015	Industrial activities; naturally occurring sources
Chlorate	PPB	174	32-330	Feb & Aug 2015	By-product of disinfection
1,4-Dioxane	PPB	0.14	0.14-0.14	Feb & Aug 2015	Industrial activities and landfills

Being Water Smart



The BWL is committed to growing with energy and water industry changes to ensure the most reliable, efficient and affordable options are available to our customers.

BWL is about 85 percent finished with the BSmart project that began in December 2017. This is an incredibly important project that will allow customers to become partners with BWL in their commitment to efficiency, reliability and affordability. This project saw the installation of approximately 98,000 electric and 58,000 water smart meters with communication modules throughout the BWL's service territory.

BWL's smart infrastructure is made up of communication network devices. The meters accurately measure and securely send usage information to the BWL. Smart meters measure the same as previous meters, electric and water usage. This enhanced technology allows for more frequent and two-way communication between the BWL and the customer's service via the wireless networks, like the ones that are used at home or at work.

Smart meters play a critical role in enabling the integration of new technology and innovations in the water industry. With the development of the smart grid, utility companies can better monitor their water meter system and identify and respond to problems quicker. As these operational efficiencies increase, the result will be cost savings that can be passed down to all BWL customers.

What are the benefits to BWL's water customers?

- **CONTROL/AFFORDABILITY** - A Consumer Portal allows access to hourly usage data, customized usage decisions and pricing programs.
- **SAFETY/RELIABILITY** - Leak/Burst Detection identification and faster restoration.
- **CUSTOMER SERVICE** - Improved customer service via two-way communication technology, eliminating need for investigative site visits, increases response time and reducing the number of estimated bills.

To learn more about BWL's BSmart Program, visit our website at www.lbw.com/bsmart.

Additional Ways to be Water Smart

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers – a 5-minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
- Visit www.epa.gov/watersense for more information.

General Health Information Provided by the EPA

In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. United States Food and Drug Administration (FDA) regulations also 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 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)**.

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 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 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, stormwater runoff and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organics, which are byproducts of industrial processes and petroleum production, can also come from gas stations, urban stormwater runoff and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

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 can be particularly at risk of 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 from microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

For more information about our water quality, please contact Angie Goodman at 517-702-7059 or angie.goodman@lbwl.com. Learn more about the BWL water system at www.lbwl.com/water. For more information about safe drinking water, visit the U.S. Environmental Protection Agency (EPA) at www.epa.gov/safewater/.



**TOMMY
TAP WATER
SAYS, 'FILL
AT THE TAP
DRINK. REPEAT'**

