



City of Battle Creek

Reporting year
2023

Annual Water Quality Report

**Prepared and
presented by the**
City of Battle Creek
PWS ID# 0000450



The City of Battle Creek Water Division **Water Meter Shop** staff, with water meters: back, from left: Josh Barker, Ivan Scovel, Gino Henry, Kyle Morris, David Payne, Burnie Moore, and Zach Dopp. Sitting, from left, Tara Reniger and Lynette Winstone.

excellent water service from the city



Perry Hart
Battle Creek Utility
Administrator

For help in another language, please call the Department of Public Works at 269-966-3343. The city will provide interpretation at no cost to the caller.

Por consultas o asistencia en español, por favor comuníquese con el Departamento de Obras Públicas al (269) 966-3343. Se le conseguirá un intérprete de forma gratuita.

အကယ်၍ အခြားဘာသာစကားဖြင့် အကူအညီလိုပါက Department of Public Works ဖုန်း (၂၆၉) ၉၆၆ ၃၃၄၃ သို့ ခေါ်ဆိုနိုင်ပါသည်။ စကားပြန်ကို အခမဲ့စီစဉ်ပေးပါမည်။

The City of Battle Creek is pleased to present our annual water quality report, with testing completed between Jan. 1 and Dec. 31, 2023.

We continue to dedicate ourselves to producing drinking water that meets all state and federal standards. We always look for, and use, new methods to deliver the best quality drinking water to you, our customers.

In 2023 we worked on the following projects, helping us meet the needs of our water customers:

We helped an effort to provide publicly-supplied water to the Bedford Township neighbors along River Road. The Calhoun County Public Health Department worked with local engineering firms and the state Department of Environment, Great Lakes, and Energy to finance this project.

There were concerns with the area wells, due to elevated levels of PFAS discovered by the county. The city helped design and install a river crossing where a 12-inch high-density polyethylene water main was directionally bored under the Kalamazoo River near Stringham Road. This will create a water supply replacement for the River Road neighbors. The water main also creates improved redundancies for the water system in this area, creating a loop and eliminating a long, dead-end water main that has historically served our Wastewater Treatment Plant.

We have been part of a cooperative effort with Emmett Township and the City of Marshall in developing plans for water system extensions through Emmett and into Marshall to provide service to the development of the Ford BlueOval campus.

This effort has involved the work of several engineering firms, and multiple city staff. The city will gain production capacities at the Verona Pumping Station to help with providing water for this new facility.

After several delays getting the necessary components, we were able to replace a broken 36-inch water valve at Verona Pumping Station.

This improvement will help define the amount of water produced and pumped into the distribution system more accurately. The two 36-inch meters are now operating and have replaced meters that were 43 years old and unable to be calibrated any longer.

We inserted a temporary plate within the 36-inch water main to facilitate the valve replacement. This temporary line stop held back the system water pressure while contractors replaced the valve. Using this procedure avoided depressurizing the water system, which would have resulted in a system-wide boil water advisory.

We extended the Beckley Road water main to provide service to that area of the city, and to provide redundancy by creating a looped water system. This also allows us to provide water to the state's I-94 rest area at eastbound mile marker 96.

We chose the Piper Park area for the replacement of lead service lines, due to the condition of the streets and the number of lead service lines in the area. This allowed us to complete both street and water projects efficiently.

For more information about this report, or for other questions about your drinking water, in **Battle Creek** city limits, contact Utility Administrator Perry Hart at 269-966-3481 or plhart@battlecreekmi.gov.

If you live in the **City of Springfield**, call 269-965-2354.

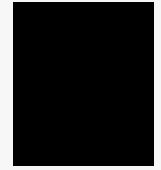
If you live in **Emmett Township**, call 269-968-0241.

Sign up for **Water Information System** text and email notifications at battlecreekmi.gov/notifyme.

Have a water concern after hours, on weekends, or holidays? Call 269-966-3493.

The **Battle Creek City Commission** invites neighbors to give public comment during regular meetings, typically at 7 p.m. the first and third Tuesdays of each month at City Hall, 10 N. Division St. For agendas and more information, visit battlecreekmi.gov or call 269-966-3311. Meetings stream live on the city's YouTube channel, on AccessVision cable, and at accessvision.tv.

important health information



Some people may be more vulnerable to contaminants in drinking water than the general population.

Immunocompromised people, such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

The U.S. 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 800-426-4791 or water.epa.gov/drink/hotline.

Infants and children who drink water containing lead could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities.

Adults who drink this water over many years could develop kidney problems or high blood pressure.

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level, over a relatively short amount of time, could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level, over many years, could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

treating our water

The treatment process of our drinking water has a series of steps at our Verona facility on Brigden Drive.

First, we draw water from the groundwater aquifer, and send it to our Radon, Iron, and Manganese removal plant (we call this the RIM Plant). Once there, we add air through an aeration process that removes radon and oxidizes iron and manganese. These two processes help remove iron and manganese later in the treatment process. Aeration (adding air to the water) also makes the iron and manganese form larger particles, which are easier to remove.

Next, we filter the water to remove the iron and manganese through dual-media, rapid sand filters. After filtration, we add a small amount of phosphate product, to keep the water from corroding our system's pipes and plumbing, which benefits lead and copper control.

Next, we send the water to an underground reservoir. Finally, we add low doses of fluoride (for dental health) and chlorine (to disinfect), and we pump the water to our water towers, and into your homes and businesses.

source water assessment

The state assessed our Columbia and Verona well field source water in 2003 to determine their relative potential for contamination. The susceptibility rating is on a seven-tier scale, from very low to very high, based primarily on geologic sensitivity, water chemistry, and contaminant sources.

The susceptibility rating for Verona is **"high."** It is important to understand that these ratings do not imply poor water quality, only the system's potential to become contaminated in assessment areas. There are remedies in place for known contaminant sources for Verona to prevent municipal well contamination.

The Columbia well field had not been used as a municipal water source since 2003 and was decommissioned and plugged in 2022.

To further protect our drinking water source at Verona, we developed a wellhead protection plan overseen by a team that meets quarterly. For more information, see battlecreekmi.gov/publicworks and click Environmental Services, or call Utility Administrator Perry Hart at 269-966-3481.

where does my water come from?

The City of Battle Creek uses groundwater from the Marshall Sandstone Aquifer, drawn from the Verona Well Field in the northeast section of the city. This is our sole source of drinking water.

We constructed wells in the sandstone formation to collect the water stored there.

What is groundwater?

Groundwater is water beneath the surface of the earth that fills openings, known as pore spaces, in sand, gravel, or fractured rock. Groundwater begins as precipitation from snow or rain, which passes through the soil and accumulates in the pore spaces.

What is an aquifer?

When enough water accumulates to supply a well, it is considered an aquifer. The City of Battle Creek gets its water from a bedrock aquifer. We pump the water from 22 wells, with depths ranging from 100-150 feet.



Verona teammate Josh is adjusting the sodium hypochlorite (chlorine) feed rate that is used to disinfect the drinking water and kill harmful bacteria.

substances that could be in the water

To make sure tap water is safe to drink, the U.S. Environmental Protection Agency prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. One can reasonably expect drinking water, including bottled water, to contain at least small amounts of contaminants. **The presence of these contaminants does not necessarily indicate the water poses a health risk.**

The sources of drinking water - both tap and bottled - 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 - in some cases, radioactive material - and substances from animals, or human activity.

Substances that may be in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or 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/herbicides, which may come from a variety of sources, such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic compounds, which are by-products of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally occurring, or may be the result of oil and gas production, and mining activities.

For more information about contaminants, and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline: 800-426-4791.

verona well field update

The City of Battle Creek continues to use the Verona Well Field as our source of drinking water, and we are excited to share our efforts over the last year to ensure this valuable resource continues to be a viable source of drinking water long into the future.

SPECIAL NOTICE

The City received a Significant Deficiency Violation Notice on Dec. 20, 2022. This notice was the result of our practice to operate and maintain the pumping equipment used at the Verona Well Field. These efforts discovered concerns with the condition of the well casings, and led to evaluating all 22 wells. This information was shared with the state Department of Environment, Great Lakes, and Energy (EGLE), which led to the issuing of the violation.

This notice identified three violations of the rules within the Safe Drinking Water Act of 1976/PA 399:

- R 325.10807(c), Location of well of the administrative rules: A well shall be constructed to maintain existing natural protection against contamination of water-bearing formations, and to prevent all known sources of contamination from entering the well.
- R 325.10816(2), Location of well in area subject to flooding: Any opening into the well casing shall be not less than two feet above the greater of the following: 100-year flood elevation or the maximum recorded flood elevation.
- R 325.10819(1), Well casing in rock formation: A well developed in rock formation must have adequate protective material above the aquifer, no evidence of aquifer contamination, and no direct flow from surface or near surface sources to the rock aquifer.

We have engaged experts to assist us with a large-scale project addressing these issues. Managing this challenge with a team has brought a collaborative approach to improve and protect this water resource.

The team includes EGLE, the U.S. Environmental Protection Agency, the Verona Well Field Group,

Jones & Henry Engineers, Ltd., Fleis & VanderBrink Engineering, Inc., Ensafe Engineering, the Calhoun County Public Health Department, and the City of Battle Creek. This group has worked together over the past year in areas of financing, project planning, construction, project management, compliance, and procurement.

This effort has one simple goal: providing a safe and reliable supply of drinking water to you, our customer.

To ensure that we continue to provide safe drinking water during this project, the city has been conducting additional water testing to ensure we meet or exceed all water quality requirements.

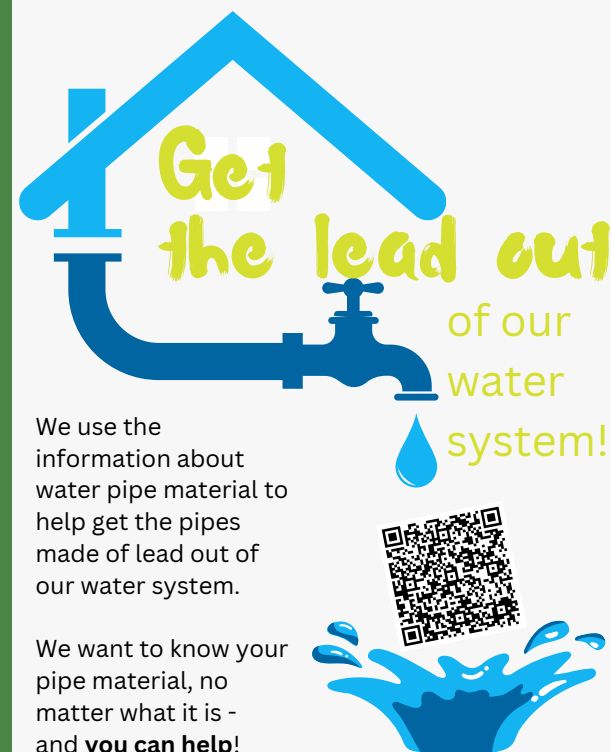
The project plan involves drilling new wells into the confined aquifer and placing new well casings to this depth. The new casings will provide the security we need to be able to draw water from the confined aquifer and prevent drawing any water from the more susceptible unconfined aquifer that lies above it.

With new casings in place, well pumps will be replaced as needed. Some of the new wells will use existing pumps, as regular maintenance means they do not need to be replaced at this time. This is being done as a cost-saving measure.

Through the team's efforts, we have qualified for a substantial amount of financing that includes low-interest loans provided by the state. We also have received funding through the sale of bonds to subsidize the work being done in the wellfield, and throughout the water and sewer systems in the Battle Creek area.

We all appreciate the trust you have in us to maintain, evaluate, and improve the many components we use to provide you high quality, safe, and reliable drinking water to protect your health and the communities that we serve. We continually take tremendous pride in having the opportunity to serve you all.

The city needs your help to...



We use the information about water pipe material to help get the pipes made of lead out of our water system.

We want to know your pipe material, no matter what it is - and **you can help!** Please take our short survey today!

Find your water meter in the basement. Look for the pipe that comes from your outside wall and connects to the meter.

Scan this code or visit battlecreekmi.gov for tips on how to identify your water pipe material and to **take our short survey.**

water testing results -
tables start below

new water mains coming for Post Addition

We monitor our water for many different substances, on a strict sampling schedule. The water we deliver also must meet specific health standards.

The tables below and on the next page show those substances we detected in our water. You can request a complete list of our analytical results by calling 269-966-3481.

Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less often than once per year, because the concentrations of those substances do not change frequently. In these cases, we show the most recent sample data, along with the year we collected it.

The City of Battle Creek has found that the oldest parts of our city most often have lead and galvanized water service materials. With the new state funding we will receive, we will replace hundreds of lead and galvanized water service lines.

The **Post Addition neighborhood** will receive new water main, along with new water services, equal to removing about 500 lead and galvanized service lines from our inventory.

Other neighborhoods receiving only water service line replacements are Fremont Heights, Merritt's Addition, Addington Hills, Riverview Addition, and Maplewood Park. Our water department, along with a private contractor, have already started service line replacements in these areas. We estimate there will be 500 lead and galvanized service lines replaced in those areas by 2028.

We are in the process of receiving state funding for replacement of lead water service lines to help us complete this work.

The federal government banned the use of leaded pipe and solder in new plumbing systems in 1986. Since then we were only replacing lead services when needed. For example, during water service or shut-off valve leaks.

In 2018 the State of Michigan revised the Lead and Copper rule and the Michigan Safe Drinking Water Act. The city now needed to complete a comprehensive inventory of our service line material, which we have been diligently working on since.



water testing results

Regulated substances

				City of Battle Creek			Emmett Township			City of Springfield			Typical source
Substance (unit of measure)	Sample year	MCL [MRDL]	MCGL [MRDLG]	Amount detected	Range, low-high	Violation?	Amount detected	Range, low-high	Violation?	Amount detected	Range, low-high	Violation?	
Chlorine (ppm)	2023	[4]	[4]	0.93	.17-1.8	No	0.96	.26-1.57	No	0.69	.33-1.26	No	Water additive used to control microbes.
Fluoride (ppm)	2023	4	4	0.71	.55-.96	No	0.74	.62-1.02	No	0.71	.63-.90	No	Erosion of natural deposits; water additive to promote strong teeth; discharge from fertilizer/aluminum factories.
TTHMs (ppb)	2023	80	0	Highest LRAA 55	41-65	No	57	38-74	No	36.5	23-45	No	By-product of drinking water chlorination.
HAA5 (ppb)	2023	60	0	Highest LRAA 14.5	10.8-17.6	No	16.2	14.8-18.2	No	12.7	11.2-14.8	No	By-product of drinking water chlorination.
Total coliform bacteria (% pos. samples)	2023	5%	0	0	NA	No	0	NA	No	0	NA	No	Naturally present in the environment.

Tap water samples were collected for lead and copper analyses from sample sites throughout all three water systems.

Substance (unit of measure)	Sample year	AL	MCGL [MRDLG]	90th %ile value	Range, low-high	Above AL/total sites	Violation?	90th %ile value	Range, low-high	Above AL/total sites	Violation?	90th %ile value	Range, low-high	Above AL/total sites	Violation?	Typical source
Lead (ppb)	2023	15	0	4	0-18	1/30	No	0	0-1	0	No	0	0-1	0	No	Lead service lines; corrosion of household plumbing, including fittings and fixtures; erosion of natural deposits.
Copper (ppm)	2023	1.3	1.3	0.6	0-0.7	0/30	No	0.6	0-0.6	0	No	0.6	0-0.6	0	No	Household plumbing corrosion; natural deposit erosion.

water testing results, continued

Secondary substances

City of Battle Creek							Typical source
Substance (unit of measure)	Sample year	AL	MCGL [MRDLG]	Amount detected	Range, low-high	Violation ?	
Sodium	2023	NA	NA	26	NA	No	Naturally in the environment; road salting; septic systems.
Sulfate	2023	NA	NA	69	64-77	No	Runoff/leaching from natural deposits; industrial wastes.
Chloride	2023	NA	NA	65	60-75	No	Runoff/leaching from natural deposits.
Gross alpha (pCi/L)	2021	15	NA	1.2	0.5-1.9	No	Natural deposit erosion.
*Radium 226 (pCi/L)	2021	NA	NA	0.6	0.4-0.8	No	Natural deposit erosion.
*Radium 228 (pCi/L)	2021	NA	NA	1.1	0.4-1.8	No	Natural deposit erosion.
Combined radium (pCi/L)	2021	5	0	1.7	1-2.4	No	Natural deposit erosion.

*Radium-226 and Radium-228 results are summarized in "Combined radium" in the table above.

Additional secondary substances

Substance (unit of measure)	Sample date	AL	Amount detected	MCGL [MRDLG]	Typical source
HFPO-DA (ppt)	May 2023	370	Non-detect	None	Discharge/waste from industrial facilities using Gen X chemical process.
PFBS (ppt)	May 2023	420	Non-detect	None	Discharge/waste from industrial facilities; stain-resistant treatments.
PFHxA (ppt)	May 2023	400,000	Non-detect	None	Firefighting foam; discharge/waste from industrial facilities.
PFHxS (ppt)	May 2023	51	Non-detect	None	Firefighting foam; discharge/waste from industrial facilities.
PFNA (ppt)	May 2023	6	Non-detect	None	Discharge/waste from industrial facilities; breakdown of precursor compounds.
PFOA (ppt)	May 2023	8	Non-detect	None	Discharge/waste from industrial facilities; stain-resistant treatments.
PFOS (ppt)	May 2023	16	Non-detect	None	Firefighting foam; discharge from electroplating facilities; discharge/waste from industrial facilities.

Information on PFAS is available from the State of Michigan website:
michigan.gov/pfasresponse/drinking-water/statewide-survey

definitions

- **90th %ile:** The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. It is equal to or greater than 90% of our lead and copper detections.
- **AL: Action Level.** The concentration of a contaminant that, if exceeded, triggers treatment, or other requirements a water system must follow.
- **HAA5:** Haloacetic Acids
- **LRAA:** Locational Running Annual Average
- **MCL: Maximum Contaminant Level.** The highest level of a contaminant allowed in drinking water. They are set as close as possible to MCLGs, using the best available treatment technology.
- **MCLG: Maximum Contaminant Level Goal.** The level of a contaminant in drinking water below which there is no known or expected health risk. They allow for a margin of safety.
- **MRDL: Maximum Residual Disinfectant Level.** The highest level of a disinfectant allowed in drinking water. Convincing evidence shows adding a disinfectant is necessary to control microbial contaminants.
- **MRDLG: Maximum Residual Disinfectant Level Goal.** The level of a drinking water disinfectant below which there is no known or expected health risk. MRDLGs do not reflect the benefits of using disinfectants to control microbial contaminants.
- **NA:** Not applicable
- **pCi/L: Picocuries per liter.** A measure of radioactivity.
- **ppb: Parts per billion.** One part substance per billion parts water (or micrograms per liter).
- **ppm: Parts per million.** One part substance per million parts water (or milligrams per liter).
- **ppt: Parts per trillion.** One part substance per trillion parts water (or nanograms per liter).
- **SMCL: Secondary Maximum Contaminant Level.** Standards developed to protect aesthetic qualities of drinking water, which are not health-based.
- **TTHMs:** Total trihalomethanes



Verona teammate Josh is opening up a 36-inch butterfly valve that was just installed, due to the old valve breaking.

The 36-inch line is one of two valves leaving the Verona Pumping Station.

painting hydrants

The city is currently in the selection process to hire a contractor to **paint fire hydrants** within city limits.

The selected contractor will begin painting hydrants this summer, in 2024. It is important to keep hydrants maintained and painted within our water distribution system.

Most fire hydrants are made from cast iron material, which is susceptible to corrosion. Keeping a good coat of paint on our hydrants slows down that corrosion process. The city identifies public fire hydrants with chrome yellow paint. Keeping the hydrants painted a nice bright yellow helps the fire department identify them more easily in emergencies. It also helps the fire department identify between public hydrants (yellow) and private hydrants (red).

As the contractor paints hydrants, it is also important to ensure there is five feet of space around each hydrant. If you have a hydrant in front of your home or business, please make sure there is no landscaping, bushes or trees within a five-foot radius surrounding the hydrant.

Maintaining and painting fire hydrants helps to improve public safety in more ways than one. Please be cautious and slow down when you see city contractors painting hydrants in your neighborhood.



lead in home plumbing

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.

We are responsible for providing high-quality drinking water, but we 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 two minutes before using water for drinking or cooking.

If you have a service line that is lead, galvanized, previously connected to lead, or unknown but likely to be lead, we recommend that you run your water for at least five minutes to flush water from both your home plumbing and the lead service line.

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 800-426-4791, or on the U.S. EPA's website, [water.epa.gov/drink/info/lead](https://www.water.epa.gov/drink/info/lead).

Water system by the numbers



City of Battle Creek

19,515 total water services
3,889 known lead services
6,848 services of unknown material - unlikely to contain lead
5,307 services of unknown material

City of Springfield

1,704 total water services
3 known lead services
0 services of unknown material - unlikely to contain lead
0 services of unknown material

Emmett Township

937 total water services
0 known lead services
0 services of unknown material - unlikely to contain lead
0 services of unknown material