2022 Water Quality Report for the City of Swartz Creek, Michigan

Water Supply Serial Number: 06505

This report covers the drinking water quality for the City of Swartz Creek for the 2022 calendar year. This information is a snapshot of the quality of the water that we provided to you in 2022. Included are details about where your water comes from, what it contains, and how it compares to United States Environmental Protection Agency (USEPA) and state standards.

Your water comes from the lower Lake Huron Watershed. The State of Michigan performed an assessment of our source water to determine the susceptibility or the relative potential of contamination. The susceptibility rating is on a seven-tiered scale from "very-low" to "very-high" based on geologic sensitivity, water chemistry and contamination sources. The susceptibility of our source is **moderately low.**

If you would like to know more about this report, please contact: The City of Swartz Creek 810.635.4464.

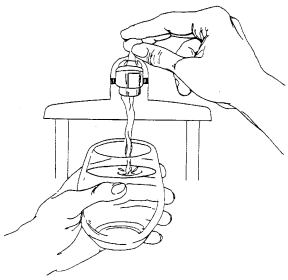
Contaminants and their presence in water: Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (800-426-4791).

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 systems 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. USEPA/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Sources of drinking water: The source of drinking water is Lake Huron. The raw water from Lake Huron is pumped through the Karegnondi Water intake and pipeline to the Genesee County Drain Commission's Water treatment plant where the raw water is treated, turning it into treated drinking water. The treated drinking water is then pumped through the GCDC water distribution system throughout the county, to the other communities they serve and to the City of Swartz Creek's water distribution system. The City's water distribution system distributes the water to its customers.

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



To ensure that tap water is safe to drink, the USEPA prescribes regulations that limit the levels of certain contaminants in water provided by public water systems. Federal Food and Drug Administration regulations establish limits for contaminants in bottled water which provide the same protection for public health.

Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2022 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1 through December 31, 2022. The State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. All the data is representative of the water quality, but some are more than one year old.

Terms and abbreviations used below:

How do I read this Chart?

It's easy! Our water is tested to assure that it is safe and healthy. These Tables are based on tests conducted by the City of Swartz Creek within the last five (5) calendar years. We conduct many tests throughout the year, however, only tests that show the presence of a contaminant are shown here. The table on this page is a key to the terms used in the following table. Sources of Contaminants show where this substance usually originates.

Key to Detected Contaminants Table		
Symbol	**Non-Abbreviated Symbol or Term**	**Definition/Explanation**
AL	Action Level	The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.
HAA5	Halo acetic Acids	HAA5 is the total of bromoacetic, chloroacetic, dibromo acetic, dichloroacetic, and trichloroacetic acids. Compliance is based on the total.
LRAA	Locational Running Annual Average	The average of analytical results for samples at a particular monitoring location during the previous four quarters.
MCL	Maximum Contaminant Level	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.
MCLG	Maximum Contaminant Level Goal	The level of contaminant in drinking water below which there is no known or expected risk to health. *MCLG's allows for a margin of safety.*
MRDL	Maximum Residual Disinfectant Level	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.

MRDLG	Maximum Residual Disinfectant Level Goal	The level of a drinking water disinfectant below which there is no known or expected risk to health. MRLDG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
n/a	not applicable	Does not apply.
ND	Not Detected	Result is not detectable at or below the laboratory detection level.
NTU	Nephelometric Turbidity Units	Measures the cloudiness of water.
pCi/L	Picocuries Per Liter	A measure of radioactivity
ppb	Parts Per Billion (one in one billion)	The ppb is equivalent to micrograms per liter. A microgram = 1/1000 milligram.
ug/L	Micrograms per liter	A microgram = 1/1000 milligrams. 1 microgram per liter is equal to 1 part per billion (ppb).
ppm	Parts Per Million (one in one million)	The ppm is equivalent to milligrams per liter. A milligram = 1/1000 gram.
RAA	Running Annual Average	The average of analytical results for all samples taken during the previous twelve months.
TT	Treatment Technique	A required process intended to reduce the level of a contaminant in drinking water.
TTHM	Total Trihalomethanes	Total Trihalomethanes is the sum of chloroform, bromodichloromethane, dibromochloromethane and bromoform. Compliance is based on the total.
°C	Celsius	A scale of temperature in which water freezes at 0° and boils at 100° under standard conditions.

>	Greater than	Mathematical symbol that denotes a value “greater than” another value.
	90th Percentile Value	The concentration of lead or copper in tap water exceeded by 10 percent of the sites sampled during a monitoring period.

2022 Regulated Detected Contaminant Tables

Inorganic Chemicals – Monitoring at the Plant Finished Water Tap

Regulated Contaminant	Test Date	Unit	MCLG, or MRDLG	MCL, TT, or MRDL	Highest Level Detected	Range of Detection	Violation yes/no	Major Sources in Drinking Water
Fluoride	Daily	ppm	**4**	**4**	0.82	0.36 – 0.82	no	Erosion of natural deposits; Water additive, which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Barium	2022	ppm	**2**	**2**	0.014	n/a	no	Erosion of natural deposits; discharge of metal refineries; discharge of drilling wastes.

Disinfection By-Products – Monitoring in Distribution System, Stage 2 Disinfection By-Products

Regulated Contaminant	Test Date	Unit	MCLG, or MRDLG	MCL, TT, or MRDL	Highest LRAA	Range of Detection	Violation yes/no	Major Sources in Drinking Water
Total Trihalomethanes (TTHM)	2022	ppb	n/a	**80**	**34.5**	**19-50**	no	By-product of drinking water disinfection
Haloacetic Acids (HAA5)	2022	ppb	n/a	**60**	**22.75**	**7.8-42**	no	By-product of drinking water disinfection

Disinfectant Residuals – Monitoring in Distribution System

Regulated Contaminant	Test Date	Unit	MCLG, or MRDLG	MCL, TT, or MRDL	Highest RAA	Quarterly Range of Detection	Violation yes/no	Major Sources in Drinking Water
Total Chlorine Residual	2022	**ppm**	**4**	**4**	**.418**	**.05-.7**	no	Water additive used to control microbes

2022 Turbidity – Monitored every 4 hours at Plant Finished Water

Highest Single Measurement Cannot exceed 1 NTU	*Lowest Monthly % of Samples Meeting Turbidity Limit of 0.3 NTU (minimum 95%)*	Violation *yes/no*	*Major Sources in Drinking Water*
0.09	100%	no	*Soil Runoff*
Turbidity is a measure of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.			

2022 Microbiological Contaminants – Monthly Monitoring in Distribution System					
Regulated Contaminant	**MCLG**	**MCL**	**Highest Number Detected**	**Violation yes/no**	**Major Sources in Drinking Water**
Total Coliform Bacteria	0	>1 Positive monthly sample, or Presence of Coliform bacteria > 5% of monthly samples	**0**	no	Naturally present in the environment
***E. coli* Bacteria**	0	**A routine sample and a repeat sample are total coliform positive, and one is also fecal or E.coli positive.**	**0**	no	Human waste and animal fecal waste.

2022 Lead and Copper Monitoring at Customer Tap								
Regulated Contaminant	**Test Date**	**Unit**	**Health Goal MCLG**	**Action Level AL**	**90th Percentile Value***	**Number of Samples over AL**	**Violation yes/no**	*Major Sources in Drinking Water*
Lead (Jan-June)	**2022**	**ppb**	**0**	**15**	**0**	**0**	no	Lead service lines; corrosion of household plumbing including fittings and fixtures; Erosion of natural deposits.
Lead (July-Dec)	**2022**	**ppb**	**0**	**15**	**0**	**0**	no	Lead service lines; corrosion of household plumbing including fittings and fixtures; Erosion of natural deposits.
Copper (Jan-June)	**2022**	**ppm**	**1.3**	**1.3**	**0**	**0**	no	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (July-Dec)	**2022**	**ppm**	**1.3**	**1.3**	**0**	**0**	no	Corrosion of household plumbing systems; Erosion of natural deposits
*The 90th percentile value means 90 percent of the homes tested have lead and copper levels below the given 90th percentile value. If the 90th percentile value is above the AL additional requirements must be met.								

Regulated Contaminant	Treatment Technique	Typical Source of Contaminant
Total Organic Carbon (ppm)	The Total Organic Carbon (TOC) removal ratio is calculated as the ratio between the actual TOC removal and the TOC removal requirements. The TOC was measured each month and because the level was low, there is no TOC removal requirement	Erosion of natural deposits

Radionuclides 2019							
Regulated contaminant	**Test date**	**Unit**	**MCLG, or MRDLG**	**Allowed Level**	**Level detected**	**Violation Yes/no**	**Major Sources in Drinking water**
Combined Radium 226 and 228	2/13/19	pCi/L	0	**5**	**1.1 ± 0.50**	no	Erosion of natural deposits
Gross Alpha	2/13/19	pCi/L	0	**15**	**2.0 ± 1.0**	no	Erosion of natural deposits

2022 Unregulated Detected Contaminant

Contaminant	*MCLG*	*MCL*	*Level Detected*	*Source of Contamination*
Sodium (ppm)	*n/a*	*n/a*	8.9	Erosion of natural deposits
Magnesium	*n/a*	*n/a*	7.5	Erosion of natural deposits
Sulfate	*n/a*	*n/a*	24	Runoff/leaching from natural deposits

Additional Sampling results;

Every 5 years the United States Environmental Protections Agency (USEPA) establishes 30 unregulated contaminants for additional sampling. Unregulated contaminants are those for which the USEPA has not established drinking water standards. As required by the USEPA, Genesee County Drain Commissioner Division of Water & Waste (GCDC-WWS) Services began testing for several unregulated contaminants in 2013 and will continue additional sampling in 2019 and 2020. The purpose of unregulated contaminants monitoring is to assist USEPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. Before USEPA regulates a contaminant, it considers adverse health effects, the occurrence of the contaminant in drinking water, and whether the regulation would reduce health risk. The following tables list the unregulated contaminants detected during the **2019** calendar year.

Unregulated Contaminants– Monitored at the Primary Source (AM1: metals, pesticides, alcohols, SVOCs) – tested for in 2019

Contaminant	Units	Results	Source
Bromide	ppm	ND - 23.2	Naturally present is fossil fuel, coal, and shale.
Total Organic Carbon	ppm	2 - 2.4	Erosion of natural deposits.

Unregulated Contaminants– Monitored at the Treatment Plant and Entry Point into the System – tested for in 2019

Contaminant	Units	Range	Source
Manganese, total	ug/l	2.1 – 10.6	Naturally present in the environment.

Unregulated Contaminants– Monitored in the Distribution System – tested for in 2019

Contaminant	Units	Range	Source
Dichloroacetic acid (DCAA)	ug/l	1.2 -13.2	By-product of drinking water disinfection.
Trichloroacetic acid (TCAA)	ug/l	1.6 – 16.5	By-product of drinking water disinfection.
Bromo chloroacetic acid (BCAA)	ug/l	0.3 – 3.9	By-product of drinking water disinfection.

Bromo dichloroacetic acid (BDCAA)	ug/l	ND – 3.1	By-product of drinking water disinfection.
Dibromo acetic acid (DBAA)	ug/l	ND – 0.8	By-product of drinking water disinfection.
ChloroDiBromoAcetic acid	ug/l	ND – 0.6	By-product of drinking water disinfection.
HAA5 Group	ug/l	2.8 – 22.6	By-product of drinking water disinfection.
HAA6Br Group	ug/l	0.6 – 8.1	By-product of drinking water disinfection.
HAA9 Group	ug/l	3.7 – 29.9	By-product of drinking water disinfection.

Tested for but not Detected Unregulated Contaminants:
Germanium, Chlorpyrifos, Dimethipin, Ethoprop, alpha-Hexachlorocyclohexane, Oxyfluorfen, Total Permethrin, Profenophos, Tebuconazole, Tribufos, butylated hydroxy anisole, o-toluidine, Quinoline, 1-butanol, 2-methoxyethanol, 2-propen-1-ol, MonoChloroacetic acid, MonoBromoAcetic acid, TriBromoAcetic acid, PFAS/PFOS

During the **2020** calendar year, the Unregulated Contaminants that were sampled for, were not detected.

Tested for but not Detected Unregulated Contaminants:
Anatoxin-a, Cylindrospermospsin, Total Microcystins, PFAS/PFOS

Per- and Polyfluoroalkyl Substances (PFAS):
Per- and polyfluoroalkyl substances (PFAS), area group of chemicals that are resistant to heat, water and oil. PFAS have been classified by the United States Environmental Protection Agency (US EPA) as an emerging contaminant on the national landscape. For decades, they have been used in many industrial applications and consumer products such as carpeting, waterproof clothing, upholstery, food paper wrappings, fire-fighting foams and metal plating. They are still used today. PFAS have been found at low levels both in the environment and blood samples from the general US population.

These chemicals are persistent, which means they do not break down in the environment. They also accumulate, meaning the amount builds up over time in the blood and organs. Although our understanding of these emerging contaminants is constantly evolving, elevated levels of PFAS have the potential to cause increased cholesterol, changes in the body's hormones and immune system, decreased fertility, and increased risk of certain cancers. Links to these health effects in humans are supported by epidemiologic studies and by laboratory studies in animal model.

Are there health advisory levels?
The US EPA has not established enforceable drinking water standards, called maximum contaminant levels, for these chemicals. However, the US EPA has set a lifetime health advisory (LHA) level in drinking water for two PFAS: perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). The PFOA and PFOS LHA is the level or amount, *below which no harm is expected from these chemicals*. The LHA level is 70 parts per trillion (ppt) for PFOA and 70 ppt for PFOS. If both POFA and PFOS are present, the LHA is 70 ppt for the combined concentration.

The amount of PFOA and PFOS combined in the sample collected from our raw water intake was ND (Non-Detectable), for these two chemicals. There are other PFAS compounds that currently do not have LHA level. For information on PFOA, PFOS, and other PFAS, including possible health outcomes, you may visit

these websites: https://www.epa.gov/pfas; https://www.atsdr.cdc.gov/pfas/; or http://www.michigan.gov/pfasresponse.
If any resident has additional questions regarding this issue, the State of Michigan Environmental Assistance Center can be contacted at 800-662-9278. Representatives may be reached to assist with your questions Monday through Friday, 8:00 AM to 4:30 PM.

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 is primarily from materials and components associated with service lines and home plumbing. The city of Swartz Creek 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 have a lead service line it is recommended that you run your water for at least 5 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 or at http://www.epa.gov/safewater/lead.