

# 2020 Drinking Water Quality Report

## City of Rochester Municipal Water System

We are pleased to present this year's Annual Water Quality Report. This report is designed to inform you about the quality water and services we deliver to you every day, and covers the drinking water quality for the City of Rochester for the 2020 calendar year. Our goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve and protect our water resources. We are committed to ensuring the quality of your water. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards.

We are happy to report that our drinking water is safe and meets or exceeds federal and state requirements.

The City of Rochester has two different sources of water. Part of our City receives surface water from the Great Lakes Water Authority (GLWA) by way of the Charter Township of Shelby. The water is drawn through the GLWA Lake Huron Water Treatment Plant, located off the shore of Lake Huron. The other part of our City receives groundwater. Water quality information on both is included in this Report. The Western portion of the City of Rochester, west of the water tower, is supplied by the groundwater system. The Eastern portion of the City of Rochester, east of the water tower, is supplied by the GLWA.

For residents fed through GLWA, your source water comes from the lower Lake Huron watershed. The watershed includes numerous short, seasonal streams that drain to Lake Huron. The Michigan Department of Environmental Quality in partnership with the U.S. Geological Survey, the Detroit Water and Sewerage Department, and the Michigan Public Health Institute performed a source water assessment in 2004 to determine the susceptibility of potential contamination. The susceptibility rating is a seven-tiered scale ranging from "very low" to "very high" based primarily on geologic sensitivity, water chemistry, and contaminant sources. The Lake Huron source water intake is categorized as having a moderately low susceptibility to potential contaminant sources. The Lake Huron water treatment plant has historically provided satisfactory treatment of this source water to meet drinking water standards.

In 2015, GLWA received a grant from the Michigan Department of Environmental Quality to develop a source water protection program for the Lake Huron water treatment plant intake. The program includes seven elements that include the following: roles and duties of government units and water supply agencies, delineation of a source water protection area, identification of potential of source water protection area, management approaches for protection, contingency plans, siting of new sources and public participation and education. If you would like to know more information about this report or a complete copy of this report please, contact the Rochester DPW at **(248) 651-5165** or visit the Great Lakes Water Authority's website at [www.glwwater.org](http://www.glwwater.org).

For the portion of the City receiving groundwater, your water comes from five (5) groundwater wells, each over 100 feet in depth, in a glacial groundwater aquifer. The State 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, well construction, water chemistry and contamination sources. The susceptibility of our sources ranges from medium to high. For more information, or a complete copy of this report, please contact the Rochester DPW at **(248) 651-5165**.

### **What is Groundwater?**

Groundwater is water below the surface that feeds wells and springs and maintains the level of rivers and lakes in dry weather. Groundwater comes from rain and snow that soaks into the ground and is filtered down under the surface. It can be brought to the surface from a well using a pump. Once pumped, the groundwater can be used for drinking or irrigating landscapes. If chemicals and pollutants are dumped on the ground, they can migrate into the groundwater and make it unsafe to drink or use for irrigation.

**What you can do to protect the City's drinking water supply:**

- Always recycle household chemicals like gasoline, paint, and pesticides.
- Never dump chemicals onto the ground.
- Never flush chemicals down the toilet

For safe disposal of household chemicals and collection locations, contact NOHaz at (248) 858-5656, or visit their website at: [www.oakgov.com/advantageoakland/planning/wasteandrecycling/Pages/nohaz.aspx](http://www.oakgov.com/advantageoakland/planning/wasteandrecycling/Pages/nohaz.aspx)  
For more information on the City's groundwater supply and what the City is doing to help protect it, visit our website at: <https://www.ci.rochester.mi.us/519/Wellhead-Protection>.

**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 water 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.

**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 storm water runoff, and septic systems.

**Radioactive contaminants**, which are naturally occurring or 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 provide the same protection for public health.

**Warning about the vulnerability of some populations to contaminants in drinking water:** Some people may be more vulnerable to contaminants in drinking water than is 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 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).

While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of

removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

If present, elevated levels of lead can cause serious health problems. Pregnant women, infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. The City of Rochester 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 service line that is lead, galvanized previously connected to lead, or unknown but likely to be lead, 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 at (800-426-4791) or at <http://water.epa.gov/drink/info/lead>.

The City of Rochester researched records and conducted site visits in 2019-2020 in regard to water service line material. There are eleven (11) homes on the groundwater system that may have a galvanized water service.

Unregulated contaminants are those for which EPA has not established drinking water standards. Monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants. Beginning in July of 2008 - April 2009, the Detroit Water and Sewerage Department (DWSD) began monitoring quarterly for unregulated contaminants under the Unregulated Contaminant Monitoring Rule 2 (UCMR2.) All the UCMR2 contaminants monitored on List 1 and List 2 in 2008-2009 were undetected.

### **Water Quality Data**

The table below lists all the drinking water contaminants that we detected during the 2020 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 - December 31, 2020. 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 of the data is representative of the water quality, but some are more than one year old.

**As you can see, our system had no violations. We're proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some contaminants have been detected. The EPA has determined that your water is SAFE at these levels.**

**We will update this report annually and will keep you informed of any problems that may occur throughout the year, as they happen. If you have any questions about this report or concerning your water utility, please contact the City of Rochester DPW at 248-651-5165. We want our customers to be informed about their water utility.**

**Regularly scheduled City Council meetings are held on the second and fourth Mondays of each month, at 7:00 PM, in the Council Chambers of City Hall, 400 Sixth Street, Rochester, MI. For more information about safe drinking water, visit the U S Environmental Protection Agency at [www.epa.gov/safewater](http://www.epa.gov/safewater).**

***PLEASE NOTE* that this report will not be mailed to each customer in the City of Rochester. Copies of this report are available at <http://www.rochestermi.org/234/Water-Quality-Report> and at Rochester City Hall, 400 Sixth Street, upon request.**

# Rochester Groundwater Information

## 2020 Water Quality Data

Regulated Contaminant	MCL	MCL G	Your Water	Range	Sample Date	Violation Yes/No	Typical Source of Contaminant	
Fluoride (ppm)	4	4	0.45	N/A	5-14-20	No	Erosion of natural deposits; Discharge from fertilizer and aluminum factories.	
Arsenic (ppb)	10	0	2.2	N/A	7-11-17	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronic production wastes	
Total Trihalomethanes (TTHM)( ppb)	80	N/A	11	N/A	7-9-20	No	Byproduct of drinking water disinfection.	
Haloacetic Acids (HAA5) (ppb)	60	N/A	2.8	N/A	7-9-20	No	Byproduct of drinking water disinfection.	
Combined Radium Radium 226 & 228 (pCi/L)	5	0	0.78 ± 0.57	N/A	5-14-20	No	Erosion of natural deposits.	
Gross Alpha (pCi/L)	15	0	0.93 ± 0.77	N/A	5-14-20	No	Erosion of natural deposits.	
Nitrate (ppm)	10	10	0.10	N/A	5-14-20	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.	
Chlorine (ppm)	MRDL	MRDLG	0.33	.11 - .51	Jan - Dec 2020	No	Water Additive used to control microbes.	
	4	4						
<b>Special Monitoring and unregulated contaminant*</b>			<b>Your Water</b>	<b>Range</b>	<b>Sample Date</b>	<b>Typical Source of Contaminant</b>		
Sodium (ppm)			16	N/A	5-14-20	Erosion of natural deposits;		
<b>Contaminant Subject to AL</b>	<b>Action Level</b>	<b>MCL G</b>	<b>90% of Samples ≤ this Level</b>		<b>Sample Date</b>	<b>Number Of Samples Above AL</b>	<b>Violation Yes/No</b>	<b>Typical Source of Contaminant</b>
Lead (ppb)	15	0	3		2020	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	1.3	0.2		2020	0	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

\* Unregulated contaminants are those for which EPA has not established drinking water standards. Monitoring helps EPA to Determine where certain contaminants occur and whether it needs to regulate those contaminants.

Microbial Contaminants	MCL	MCLG	Number Detected	Violation Yes/No	Typical Source of Contaminant
Total Coliform Bacteria	>1 positive monthly sample (>5% of monthly samples positive)	0	0	No	Naturally present in the Environment
Fecal Coliform and E. Coli	Routine and repeat sample total coliform positive, and one is also fecal or E. Coli positive	0	0	No	Human and animal fecal waste

## 2020 Lake Huron (Rochester East) Regulated Detected Contaminants Table

2020 Inorganic Chemicals - Annual Monitoring at Plant Finished Tap								
Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest Level Detected	Range of Detection	Violation	Major Sources in Drinking Water
Fluoride	3-10-2020	ppm	4	4	0.72	n/a	no	Erosion of natural deposit; Water additive, which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	3-10-2020	ppm	10	10	0.30	n/a	no	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Barium	5-16-17	ppm	2	2	0.01	n/a	no	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.

2020 Disinfection Residual - Monitoring in the Distribution System								
Regulated Contaminant	Test Date	Unit	Health Goal MRDLG	Allowed Level MRDL	Highest Level RAA	Range of Quarterly Results	Violation	Major Sources in Drinking Water
Total Chlorine Residual	2020	ppm	4	4	0.77	0.70-0.85	no	Water additive used to control microbes

2020 Disinfection By-Products - Stage 2 Disinfection By-Products Monitoring in the Distribution System								
Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest Level LRAA	Range of Quarterly Results	Violation	Major Sources in Drinking Water
(TTHM) Total Trihalomethanes	2020	ppb	n/a	80	24	n/a	no	By-product of drinking water chlorination
(HAA5) Haloacetic Acids	2020	ppb	n/a	60	27	n/a	no	By-product of drinking water chlorination

2020 Turbidity - Monitored Every 4 Hours at the Plant Finished Water Tap				
Highest Single Measurement Cannot Exceed 1 NTU	Lowest Monthly % of Samples Meeting Turbidity Limit of 0.3 NTU (minimum 95%)		Violation	Major Sources in Drinking Water
0.10 NTU	100%		no	Soil Runoff

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

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 is measured each quarter and because the level is low, there is no requirement for TOC removal.	Erosion of natural deposits

Radionuclides - Monitored at the Plant Finished Tap in 2014							
Regulated Contaminant	Test Date	Unit	MCLG	MCL	Level Detected	Violation	Major Sources in Drinking Water
Combined Radium Radium 226 and 228	5/13/14	pCi/L	0	5	0.86 ± 0.55	no	Erosion of natural deposits

### Lead and Copper Monitoring at the Customer's Tap in 2020

Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Action Level AL	90 <sup>th</sup> Percentile Value*	Number of Samples Over AL	Range of Individual Samples Results	Violation	Major Sources in Drinking Water
Lead	2020	ppb	0	15	0	0	0	no	Lead services lines, corrosion of household, plumbing including fittings and fixtures; erosion of natural deposits
Copper	2020	ppm	1.3	1.3	.1	0	0 - .3	no	Corrosion of household plumbing system; Erosion of natural deposits; leaching from wood preservatives.

\* The 90<sup>th</sup> percentile value means 90 percent of the homes tested have lead and copper levels below the given 90<sup>th</sup> percentile value. If the 90<sup>th</sup> percentile value is above the AL additional requirements must be met.

### 2020 Special Monitoring

Contaminant	Test Date	Unit	MCLG	MCL	Highest Level Detected	Source of Contaminant
Sodium	3-10-2020	ppm	n/a	n/a	4.91	Erosion of natural deposits

These tables are based on tests conducted by GLWA in the year 2020 or the most recent testing done within the last five calendar years. GLWA conducts tests throughout the year only tests that show the presence of a substance or require special monitoring are presented in these tables. 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 of the data is representative of the water quality, but some are more than one year old.

## 2020 Lake Huron Tap Water Mineral Analysis

Parameter	Units	Max.	Min.	Avg.
Turbidity	NTU	0.11	0.05	<b>0.07</b>
Total Solids	ppm	164	53	<b>128</b>
Total Dissolved Solids	ppm	138	56	<b>117</b>
Aluminum	ppm	0.242	0.057	<b>0.182</b>
Iron	ppm	0.192	ND	<b>0.112</b>
Copper	ppm	ND	ND	<b>ND</b>
Magnesium	ppm	8.22	6.88	<b>7.50</b>
Calcium	ppm	30.6	24.7	<b>27.3</b>
Sodium	ppm	5.94	4.39	<b>4.92</b>
Potassium	ppm	1.11	0.91	<b>1.00</b>
Manganese	ppm	ND	ND	<b>ND</b>
Lead	ppm	ND	ND	<b>ND</b>
Zinc	ppm	ND	ND	<b>ND</b>
Silica	ppm	2.4	1.7	<b>2.1</b>
Sulfate	ppm	24.3	17.9	<b>19.9</b>

Parameter	Units	Max.	Min.	Avg.
Chloride	ppm	11.9	7.9	<b>9.4</b>
Phosphorus	ppm	1.23	0.12	<b>0.51</b>
Free Carbon Dioxide	ppm	8.2	4.2	<b>5.5</b>
Total Hardness	ppm	106	96	<b>100</b>
Total Alkalinity	ppm	82	70	<b>75</b>
Carbonate Alkalinity	ppm	ND	ND	<b>ND</b>
Bi-Carbonate Alkalinity	ppm	82	70	<b>75</b>
Non-Carbonate Hardness	ppm	30	22	<b>25</b>
Chemical Oxygen Demand	ppm	4.1	ND	<b>1.5</b>
Dissolved Oxygen	ppm	13.0	8.2	<b>10.5</b>
Nitrite Nitrogen	ppm	ND	ND	<b>ND</b>
Fluoride	ppm	0.87	0.60	<b>0.71</b>
pH		7.57	7.30	<b>7.44</b>
Specific Conductance @ 25 °C.	µohms	265	201	<b>221</b>
Temperature	°C	23.9	5.5	<b>13.9</b>

## Key to the Detected Contaminants Table

Symbol	Abbreviation	Definition/Explanation
AL	Action Level	The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.
°C	Celsius	A scale of temperature in which water freezes at 0° and boils at 100° under standard conditions.
>	Greater than	
HAA5	Haloacetic Acids	HAA5 is the total of bromoacetic, chloroacetic, Dibromoacetic, dichloroacetic, and trichloroacetic acids. Compliance is based on the total.
Level 1	Level 1 Assessment	A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in the water system.
Level 2	Level 2 Assessment	A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.
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.
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	
ND	Not Detected	
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.
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 during the previous four quarters.



SMCL	Secondary Maximum Contaminant Level	An MCL which involves a biological, chemical or physical characteristic of water that may adversely affect the taste, odor, color or appearance (aesthetics), which may thereby affect public confidence or acceptance of the drinking water.
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.
μohms	Microohms	Measure of electrical conductance of water