

CITY OF ROYAL OAK

2020 CONSUMERS ANNUAL REPORT ON WATER QUALITY

ATTENTION: THIS IS AN IMPORTANT REPORT ON WATER QUALITY AND SAFETY

The City of Royal Oak, The Southeastern Oakland County Water Authority (SOCWA) and the Great Lakes Water Authority (GLWA) are proud of the fine drinking water they supply and are honored to provide this report to you. The 2020 Consumers Annual Report on Water Quality shows the sources of our water, lists the results of our tests, and contains important information about water and health. We will notify you immediately if there is ever any reason for concern about our water. We are pleased to show you how we have surpassed water quality standards as mandated by the Environmental Protection Agency (EPA) and the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

About the System

The City of Royal Oak purchases water from the Southeastern Oakland County Water Authority (SOCWA) at thirteen locations. SOCWA provides GLWA water through its member distribution systems to a population of 210,000 within a 56 square mile area. Current members are Berkley, Beverly Hills, Bingham Farms, Birmingham, Clawson, Huntington Woods, Lathrup Village, Pleasant Ridge, Royal Oak, Southfield, and Southfield Township.

Your source water comes from the Detroit River, situated within the Lake St. Clair, Clinton River, Detroit River, Rouge River, Ecorse River, watersheds in the U.S. and parts of the Thames River, Little River, Turkey Creek and Sydenham watersheds in Canada. 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 GLWA's Detroit River source water for potential contamination. The susceptibility rating is based on a seven-tiered scale and ranges from very low to very high determined primarily using geologic sensitivity, water chemistry, and potential contaminant sources. The report described GLWA's Detroit river intakes as highly susceptible to potential contamination. However, all four GLWA water treatment plants that service the city of Detroit and draw water from the Detroit River have historically provided satisfactory treatment and meet drinking water standards.

GLWA has initiated source-water protection activities that include chemical containment, spill response, and a mercury reduction program. GLWA participates in the National Pollutant Discharge Elimination System permit discharge program and has an emergency response management plan. In 2016, the Michigan Department of Environmental, Great Lakes and Energy approved GLWA's Surface Water Intake Protection plan for the Belle Isle intake. The plan has seven elements that include: roles and duties of government units and water supply agencies, delineation of a source water protection areas, identification of potential sources of contamination, management approaches for protection, contingency plans, siting of new water sources, public participation, and public education activities. GLWA is in the process of updating the plan which should be completed by September 2021. If you would like to know more information about the Source Water Assessment report please, contact GLWA at (313 926-8102).

And/or

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 2016, the Michigan Department of Environmental, Great Lakes and Energy approved GLWA's Surface Water Intake Protection plans for the Lake Huron water intake. The plan has seven elements: roles and duties of government units and water supply agencies, delineation of a source water protection areas, identification of potential sources of contamination, management approaches for protection, contingency plans, siting of new water sources, public participation and public education activities. GLWA is in the process of updating the plan which should be completed by September 2021. If you would like to know more information about the Source Water Assessment report please, contact GLWA at (313 926-8102).

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 Environmental Protection Agency'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 dissolve naturally occurring minerals and, in some cases, radioactive materials, 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 discharge, oil and gas production, mining, or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, 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 can be 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 must provide the same protection for public health.

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, di-bromoacetic, 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 our system.
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. MCLGs allow 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. MRDLG'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 all analytical results for all samples during the previous four quarters.
SMCL	Secondary Maximum Contaminant Level	
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
Symbol	Abbreviation	Definition/Explanation

2020 Springwells Regulated Detected Contaminants Table

2020 Inorganic Chemicals – Monitoring at Plant Finished Water Tap								
Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest Level Detected	Range of Detection	Violation yes/no	Major Sources in Drinking Water
Fluoride	3-10-2020	ppm	4	4	0.63	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	0.37	n/a	no	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Barium	5-16-2017	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 RAA	Quarterly Range of Detection	Violation yes/no	Major Sources in Drinking Water
Total Chlorine Residual	2020	ppm	4	4	0.70	0.60-0.79	no	Water additive used to control microbes

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 yes/no	Major Sources in Drinking Water
0.21 NTU	100%		no	Soil Runoff
<p>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.</p>				

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

2020 Special Monitoring						
Contaminant	Test Date	Unit	MCLG	MCL	Highest Level Detected	Source of Contaminant
Sodium	3-10-2020	ppm	n/a	n/a	5.37	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 Springwells Mineral Analysis

Parameter	Units	Max.	Min.	Avg.
Turbidity	NTU	0.19	0.03	0.08
Total Solids	ppm	165	76	136
Total Dissolved Solids	ppm	140	98	121
Aluminum	ppm	0.106	0.014	0.045
Iron	ppm	0.177	ND	0.110
Copper	ppm	0.008	ND	0.001
Magnesium	ppm	7.82	5.93	7.32
Calcium	ppm	31.2	23.5	27.3
Sodium	ppm	5.94	4.51	5.01
Potassium	ppm	1.06	0.89	0.98
Manganese	ppm	ND	ND	ND
Lead	ppm	ND	ND	ND
Zinc	ppm	ND	ND	ND
Silica	ppm	2.4	ND	1.8
Sulfate	ppm	31.8	21.9	25.9

Parameter	Units	Max.	Min.	Avg.
Chloride	ppm	11.6	8.5	9.8
Phosphorus	ppm	1.17	0.16	0.53
Free Carbon Dioxide	ppm	10.4	5.7	7.4
Total Hardness	ppm	108	98	102
Total Alkalinity	ppm	74	66	70
Carbonate Alkalinity	ppm	ND	ND	ND
Bi-Carbonate Alkalinity	ppm	74	66	70
Non-Carbonate Hardness	ppm	39	26	32
Chemical Oxygen Demand	ppm	13.5	ND	2.8
Dissolved Oxygen	ppm	13.8	8.8	11.1
Nitrite Nitrogen	ppm	ND	ND	ND
Fluoride	ppm	0.77	0.49	0.62
pH		7.41	7.12	7.29
Specific Conductance @ 25 °C.	µohms	243	213	224
Temperature	°C	24.6	3.5	13.4

2020 Northeast 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	0.80	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	0.36	n/a	no	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Barium	5-16-2017	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	0.76	0.67-0.84	no	Water additive used to control microbes

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
0.14 NTU	100%	no	Soil Runoff
<p>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.</p>			

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

2020 Special Monitoring						
Contaminant	Test Date	Unit	MCLG	MCL	Highest Level Detected	Source of Contaminant
Sodium	3-10-2020	ppm	n/a	n/a	5.92	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 Northeast Mineral Analysis

Parameter	Units	Max.	Min.	Avg.
Turbidity	NTU	0.10	0.05	0.07
Total Solids	ppm	165	109	141
Total Dissolved Solids	ppm	148	87	128
Aluminum	ppm	0.149	0.024	0.065
Iron	ppm	0.181	ND	0.113
Copper	ppm	ND	ND	ND
Magnesium	ppm	8.11	6.83	7.46
Calcium	ppm	30.9	24.3	27.6
Sodium	ppm	5.93	4.46	5.12
Potassium	ppm	1.06	0.91	0.99
Manganese	ppm	ND	ND	ND
Lead	ppm	ND	ND	ND
Zinc	ppm	ND	ND	ND
Silica	ppm	2.4	1.4	2.0
Sulfate	ppm	43.0	21.9	26.2

Parameter	Units	Max.	Min.	Avg.
Chloride	ppm	11.6	8.5	9.8
Phosphorus	ppm	1.17	0.16	0.53
Free Carbon Dioxide	ppm	10.4	5.7	7.4
Total Hardness	ppm	108	98	102
Total Alkalinity	ppm	74	66	70
Carbonate Alkalinity	ppm	ND	ND	ND
Bi-Carbonate Alkalinity	ppm	74	66	70
Non-Carbonate Hardness	ppm	39	26	32
Chemical Oxygen Demand	ppm	13.5	ND	2.8
Dissolved Oxygen	ppm	13.8	8.8	11.1
Nitrite Nitrogen	ppm	ND	ND	ND
Fluoride	ppm	0.77	0.49	0.62
pH		7.41	7.12	7.29
Specific Conductance @ 25 °C	µohm s	243	213	224
Temperature	°C	24.6	3.5	13.4

2020 Lake Huron 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 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

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	0.07
Total Solids	ppm	164	53	128
Total Dissolved Solids	ppm	138	56	117
Aluminum	ppm	0.242	0.057	0.182
Iron	ppm	0.192	ND	0.112
Copper	ppm	ND	ND	ND
Magnesium	ppm	8.22	6.88	7.50
Calcium	ppm	30.6	24.7	27.3
Sodium	ppm	5.94	4.39	4.92
Potassium	ppm	1.11	0.91	1.00
Manganese	ppm	ND	ND	ND
Lead	ppm	ND	ND	ND
Zinc	ppm	ND	ND	ND
Silica	ppm	2.4	1.7	2.1
Sulfate	ppm	24.3	17.9	19.9

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

2020 GLWA Cryptosporidium – Giardia Statement:

GLWA voluntarily monitors our source water for the presence of Cryptosporidium and Giardia. In 2020, the presence of Cryptosporidium and Giardia were detected in the source water at the Belle Isle Detroit River Intake serving Water Works Park, Springwells and the Northeast treatment plants. Cryptosporidium was detected once in March and Giardia once in April. All other samples monitored in 2020 were absent for the presence of Cryptosporidium and Giardia. Current test methods do not enable us to determine if these organisms are dead or if they are capable of causing disease. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life threatening illness. Immuno-compromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection. Cryptosporidium must be ingested for it to cause disease and may be passed through other means than drinking water. Surface water treatment systems like GLWA must provide treatment so that 99.9% Giardia is removed or inactivated.

CITY OF ROYAL OAK

2020 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	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 E.coli positive.	0	no	Sanitary defects

2020 Disinfection By-Products – Monitoring in Distribution System, Stage 2 Disinfection By-Products								
Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest LRAA	Range of Detection	Violation yes/no	Major Sources in Drinking Water
Total Trihalomethanes (TTHM)	2020	ppb	n/a	80	27	17.3 – 41	no	By-product of drinking water chlorination
Haloacetic Acids (HAA5)	2020	ppb	n/a	60	19	15- 24	no	By-product of drinking water disinfection

Lead and Copper Monitoring at the Customer’s Tap (sampling period January 1 through June 30, 2020)									
Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Action Level AL	90th Percentile Value*	Number of Samples Over AL	Range of Individual Samples Results	Violation	Major Sources in Drinking Water
Lead	2020	ppb	0	15	15	7	0 - 27	no	Lead services lines, corrosion of household, plumbing including fittings and fixtures; erosion of natural deposits”
Copper	2020	ppm	1.3	1.3	0.3	0	0.0 - 0.5	no	Corrosion of household plumbing system; Erosion of natural deposits; leaching from wood preservatives.

* 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.

Lead and Copper Monitoring at the Customer’s Tap (sampling period July 1 through December 31, 2020)									
Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Action Level AL	90th Percentile Value*	Number of Samples Over AL	Range of Individual Samples Results	Violation	Major Sources in Drinking Water
Lead	2020	ppb	0	15	12	3	0 - 33	no	Lead services lines, corrosion of household, plumbing including fittings and fixtures; erosion of natural deposits”
Copper	2020	ppm	1.3	1.3	0.2	0	0.0 - 0.5	no	Corrosion of household plumbing system; Erosion of natural deposits; leaching from wood preservatives.

* 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.

Number of Water Service Connections by Service Line Material		
Number of Lead Service Lines	Number of Service Lines of Unknown Material	Total Number of Service Lines
820	3885	23,555

The Fourth Unregulated Contaminant Monitoring Rule (UCMR4)

The UCMR program provides the EPA and other interested parties with nationally representative data on the occurrence of particular contaminants in drinking water, the number of people potentially being exposed and an estimate of the levels of that exposure. In accordance with SDWA, EPA will consider the occurrence data from UCMR4 and other sources, along with the peer reviewed health effects assessments, to support a regulatory determination on whether to initiate the process to develop a national primary drinking water regulation.

The table lists the minimum reporting level, level detected, average and range of each contaminant detected.

Detection levels are in micro grams per Liter (1µg/L = 1ppb)

Contaminant	Minimum Reporting Level µg/L	Level Detected	AVG	Range
Manganese	0.4	0.56	NA	NA
HAA5	NA	NA	16.49	11.4 – 21.21
HAA6Br	NA	NA	8.15	4.96 – 10.02
HAA9	NA	NA	23.7	16.36 – 28.52

Important Health Information

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 Royal Oak 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 the water for drinking or cooking. If you have a lead service line it is recommended that you run your water for 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 1-800-462-4791 or at <http://www.epa.gov/safewater/lead>.

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.

People with Special Health Concerns

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC 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.

Questions:

Local Distribution: City of Royal Oak (248) 246-3300

Southeastern Oakland County Water Supply System – Water Authority offices: (248) 288-5150. Visit our web site at www.socwa.org

Great Lakes Water Authority – www.glwater.org

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - (586) 753-3755 – www.michigan.gov/egle

U.S. Environmental Protection Agency – Safe Drinking Water Hotline: (800) 426-4791.

Water quality data for community water systems throughout the United States is available at <https://www.epa.gov/wqs-tech>