# Consumer Confidence Report – 2018
# Covering Calendar Year – 2017

This report is a snapshot of the quality of the water that we provided to our customers last year. **The City of Lawrence's water quality consistently meets or exceeds all Federal and State standards for safe drinking water.** Included are the details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards. For more information please contact, Aurora Shields at 785-832-7800.

## Sources of Drinking Water

The City of Lawrence has two major surface water sources: the Kansas River and Clinton Lake. Occasionally, water is also drawn from 6 Ground Water Wells. The Kansas Department of Health and Environment has evaluated these sources of water and their report can be found at:
http://www.kdheks.gov/nps/swap/SWreports.html

## Treatment of Source Water

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 City of Lawrence treats the source water according to EPA regulations by removing contaminants and disinfecting to protect you against microbial contaminants. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants.

## Water Contaminants

The source of drinking water includes 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 sources water before we treat it include:

*Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, 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 storm water run-off, agriculture, and residential users.

*Radioactive contaminants*, which can be naturally occurring or the result of mining activity.

*Organic contaminants*, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and also come from gas stations, urban storm water run-off, and septic systems.

Our water system is required to test a minimum of 90 samples per month in accordance with the Total Coliform Rule for microbiological contaminants. Coliform bacteria are usually harmless, but their presence in water can be an indicator of disease-causing bacteria. When coliform bacteria are found, special follow-up tests are done to determine if harmful bacteria are present in the water supply. If this is exceeded, the water supplier must notify the public.

## For Customers with Special Health Concerns

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). Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those 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).

**Taste and Odor:** Occasionally Lawrence's source water may have an effect on the smell, taste, or appearance of your drinking water. None of the contaminants that could affect your health can be tasted in drinking water. The three most common reasons for bad tasting or smelling water are:

- A funny taste can come from disinfectant that is added to the water to kill germs.
- A rotten-egg odor in some groundwater is caused by a nontoxic (in small amounts), smelly chemical – hydrogen sulfide – dissolved in the water.
- As algae, fungi, and bacteria grow in surface water sources, they give off nontoxic, smelly chemicals that can cause unpleasant tastes in water.

You can find additional information about your drinking water at: http://lawrenceks.org/utilities/annual_report

## Terms & Abbreviations

**Maximum Contaminant Level Goal (MCLG):** The "Goal" is the level of a contaminant in drinking water below which there is no known or expected risk to human health. MCLGs allow for a margin of safety.

**Maximum Contaminant Level (MCL):** The "Maximum Allowed" MCL is 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.

**Secondary Maximum Contaminant Level (SMCL):** Recommended level for a contaminant that is not regulated and has no MCL.

**Action Level (AL):** The concentration of a contaminant that, if exceeded, triggers treatment or other requirements.

**Treatment Technique (TT):** A required process intended to reduce levels of a contaminant in drinking water.

**Locational Running Annual Average (LRAA):** An average of sample results obtained over the most current 12 months at a sampling location and used to determine compliance with MCLs.

**Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**Maximum Residual Disinfectant Level Goal (MRDLG):** The highest level of a disinfectant below which there is no known or expected risk to health.

**Monitoring Period Average (MPA):** Average of samples results collected during a defined time frame.

**Non-Detect (ND):** Laboratory analysis indicates that the contaminant is not present.

**Parts per Million (ppm)** or milligrams per liter (mg/l): A measure of contaminant concentration.

**Parts per Billion (ppb)** or micrograms per liter (µg/l): A measure of contaminant concentration.

**Picocuries per Liter (pCi/L):** A measure of the radioactivity in water.

**Micromhoms per centimeter (µmhos/cm):** A measure of the ability to carry electric current.

**Million Fibers per Liter (MFL):** A measure of the presence of asbestos fibers longer than 10 micrometers.

**Nephelometric Turbidity Unit (NTU):** A measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

**Running Annual Average (RAA):** An average of sample results obtained over the most current 12 months and used to determine compliance with MCLs.

**Standard Units (S.U.):** A measuring unit for pH, based on hydrogen ion concentration.

**Water Quality Data:** The following tables list all of the drinking water contaminants which were detected during the 2017 calendar year. The presence of these contaminants does not necessarily indicate the water poses a health risk. Other contaminants were tested but were not detected. Unless noted, the data presented in this table is from the testing done January 1 - December 31, 2017. The state requires 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; therefore some of the data, though representative of the water quality, is more than one year old.

## Testing Results for: City of Lawrence

**(During the 2017 calendar year, we had no violations of drinking water regulations)**

| Regulated Contaminants | Collection Date | Your Highest Value | Range (low/high) | Unit | MCL | MCLG | Typical Source |
|---|---|---|---|---|---|---|---|
| ASBESTOS | 8/27/2013 | ND | NA | MF/L | 7 | 7 | Decay of asbestos water main |
| ARSENIC | 12/21/2017 | 3.5 | ND – 3.5 | ppb | 10 | 0 | Erosion of natural deposits |
| ATRAZINE | 5/25/2017 | 0.2 | ND – 0.2 | ppb | 3 | 3 | Runoff from herbicide used on row crops |
| BARIUM[1] | 12/21/2017 | 0.089 | 0.023 – 0.089 | ppm | 2 | 2 | Industrial discharge from drilling and metal refineries. Erosion of natural deposits |
| CHROMIUM | 4/25/2017 | 2.7 | ND – 2.7 | ppb | 100 | 100 | Erosion of natural deposits or steel and pulp |
| FLUORIDE | 7/5/2017 | 0.37 | 0.28 – 0.37 | ppm | 4 | 4 | Erosion of natural deposits; water additive which promotes strong teeth |
| NITRATE | 4/25/2017 | 1.40 | 0.43 – 1.40 | ppm | 10 | 10 | Runoff from fertilizer use. Naturally present in the environment |
| SELENIUM | 12/21/2017 | 2.80 | ND – 2.80 | ppb | 50 | 50 | Erosion of natural deposits. Industrial discharge from copper smelting. |
| TURBIDITY[2] | 6/19/2017 | 0.401 | 0.033 – 0.354 | NTU | 1 | | Soil runoff |
| CHLORAMINE | 2017 | 3.4 (RAA) | 3.3 – 3.6 | ppm | 4 (MRDL) | 4 (MRDLG) | Additive to control microbes |
| | 2017 | 3.5 (MPA) | | | | | |
| TOTAL ORGANIC CARBON[3] | 2017 | 4.2 | 2.1 – 4.2 | ppm | TT | NA | Naturally present in the environment |

Clinton - Lowest Months Removal Ratios of Total Organic Carbon were March and December at 1.1. Removal Ratio must be at least 1.0.
Kaw - Lowest Months Removal Ratios of Total Organic Carbon was January at 1.28. Removal Ratio must be at least 1.0.

1. Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
2. 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, and diarrhea and associated headaches.
3. Total organic carbon has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include Total Trihalomethanes and Total Haloacetic acids.

| Disinfection Byproducts | Monitoring Period | Your Highest LRAA | Range (low/high) | Unit | MCL | MCLG | Typical Source |
|---|---|---|---|---|---|---|---|
| TOTAL HALOACETIC ACIDS | 2017 | 20.5 | 11.2 – 36.7 | ppb | 60 | 0 | By-product of drinking water disinfection |
| TOTAL TRIHALOMETHANES | 2017 | 52.4 | 21.8 – 76.2 | ppb | 80 | 0 | By-product of drinking water chlorination |

Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.

| Lead and Copper | Monitoring Period | 90th Percentile | Range (low/high) | Unit | AL | Sites Over AL | Typical Source |
|---|---|---|---|---|---|---|---|
| COPPER | 2017 | 0.16 | 0.02 – 1.20 | ppm | 1.30 | 0 | Corrosion of household plumbing |
| LEAD | 2017 | 3.4 | ND – 220 * | ppb | 15 | 0 | Corrosion of household 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. Your water system is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead. Please read tips to reduce lead in drinking water at https://lawrenceks.org/utilities/lead/. * The elevated level of lead at 220 ppb is from one single residence for one single sample collected at that residence. Subsequent testing at the same residence indicated lead levels were below the Action Level (AL) of 15 ppb.

| Radiological Contaminants | Collection Date | Your Highest Value | Range (low/high) | Unit | MCL | MCLG | Typical Source |
|---|---|---|---|---|---|---|---|
| RADIUM 228 | 9/9/2014 | 1.60 | ND – 1.60 | pCi/L | 5 | 0 | Erosion of natural deposits |
| GROSS ALPHA & BETA | 9/9/2014 | 1.60 | 0.70 – 1.60 | pCi/L | 15 | 0 | Erosion of natural deposits |

| Constituents Having Secondary MCL's | Collection Date | Your Highest Value | Range (low/high) | Unit | SMCL |
|---|---|---|---|---|---|
| ALUMINUM | 12/21/2017 | 0.11 | ND-0.11 | ppm | 0.05 |
| CHLORIDE | 8/15/2017 | 110 | 16 – 110 | ppm | 250 |
| Hydrogen ion (pH) | 12/27/2016 | 9.5 | 6.7 – 9.5 | S.U. | 8.5 |
| SULFATE | 8/15/2017 | 96 | 19 – 96 | ppm | 250 |
| Total Dissolved Solids (TDS) | 8/15/2017 | 410 | 180 - 410 | ppm | 500 |

| UNREGULATED PARAMETERS | FEDERAL LEVEL RECOMMENDED | Your Highest Value | Range (low/high) | Unit | TYPICAL SOURCE |
|---|---|---|---|---|---|
| Unregulated Parameters are monitored in the interest of the customers and sometimes to assist regulators in developing future regulations | | | | | |
| ALKALINITY, TOTAL as $CaCO_3$ | 300 | 152 | 46 – 152 | ppm | Erosion of natural deposits |
| BROMIDE | 0.05 | 0.04 | ND – 0.04 | ppm | Erosion of natural deposits |
| CALCIUM | 200 | 53 | 43 – 53 | ppm | Erosion of natural deposits |
| CHLORATE (8/14/2013) | NA | 1300 | 39 - 1300 | ppb | Degradation of chlorine products used in water treatment for disinfection |
| CONDUCTIVITY @ 25 °C | 1500 | 910 | 310 – 910 | µmhos/cm | Erosion of natural deposits |
| HARDNESS, TOTAL as $CaCO_3$ | 400 | 190 | 118 - 190 | ppm | Erosion of natural deposits |
| MAGNESIUM | 150 | 16 | 0.9 - 16 | ppm | Erosion of natural deposits |
| NICKEL | 0.1 | 0.018 | ND - 0.018 | ppm | Erosion of natural deposits |
| ORTHOPHOSPHATE | NA | 0.56 | 0.02 – 0.56 | ppm | Additive to control pipe corrosion |
| PHOSPHORUS, TOTAL | 5 | 0.17 | 0.17 - 0.49 | ppm | Erosion of natural deposits |
| POTASSIUM | 100 | 11 | 3.7 – 11 | ppm | Erosion of natural deposits |
| SILICA | 50 | 13 | 2.4 - 13 | ppm | Erosion of natural deposits |
| SODIUM | 100 | 81 | 13 - 81 | ppm | Erosion of natural deposits |
| STRONTIUM (12/21/2017) | NA | 330 | 210 - 330 | ppb | Erosion of natural deposits. Industrial use in the faceplate glass of cathode-ray tube televisions to block x-ray emissions |
| VANADIUM (12/21/2017) | NA | 8.10 | ND – 8.10 | ppb | Erosion of natural deposits. Industrial use as vanadium pentoxide which is a chemical intermediate and a catalyst |
| HEXAVALENT CHROMIUM (8/15/2017) | NA | 2.50 | 0.13 – 2.50 | ppb | Erosion of natural deposits. Used to make steel and alloys, chrome plating, dyes, leather tanning and wood preservation |
| MOLYBDENUM (8/15/2017) | NA | 4.1 | ND – 4.1 | ppb | Erosion of natural deposits. Industrial use form molybdenum trioxide used as a chemical reagent |