



water quality **2005** report

Let's be clear

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 the 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 at 1-800-426-4791.

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

These people should seek advice about drinking water from their health care providers. Environmental Protection Agency and Centers 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 at 1-800-426-4791 or visit www.epa.gov/safewater.



Managing a state-of-the-art water services department requires relentless attention to every detail. When details are efficiently managed, not only do you get great water, you get one of the lowest prices in the metropolitan area.

Your Kansas City, Missouri Water Services Department taps into the best thinking in the country regarding issues such as testing, safety, environmental concerns and processes. We are an active member of watchdog groups such as the Partnership for Safe Water - a national initiative developed in cooperation with the Environmental Protection Agency, the American Water Works Association and the Association of Metropolitan Water Agencies.

Kansas City, Missouri Water Services Department has been municipally owned and managed for more than 125 years. We drink, bathe, and wash our blue jeans in the same water you do. We understand how important your water services are to you and your family. They're our services, too.

Why add fluoride?

Fluoride is just one of many chemicals that your Kansas City, Missouri Water Services Department uses in water treatment.

Voters approved fluoridation, the addition of fluoride, to the treatment process in 1980. The average level in treated water is 0.82 milligrams per liter, well below the federal limit of 4 milligrams per liter.

The following facts have been provided by the American Water Works Association:

- Fluoride, when administered at low levels of concentration, is proven to help prevent tooth decay.
- The American Dental Association endorsed fluoridation in 1950, reaffirming its endorsement in 1997. The American Medical Association endorsed fluoridation in 1951, and reaffirmed its endorsement in 1996. The U.S. Public Health Service has also endorsed fluoridation.
- In April 1999, the Centers for Disease Control proclaimed fluoridation to be one of the top ten greatest public health achievements of the century.
- Drinking water's fluoride content is limited under federal law. The maximum level of fluoride deemed acceptable by the Environmental Protection Agency is 4 milligrams per liter (mg/L). The Centers for Disease Control has established the "optimal level" for fluoride content in drinking water to be in the range of 0.7 mg/L to 1.2 mg/L.
- The fluoride level in Kansas City, Missouri drinking water averages 0.82 milligrams per liter with an annual range of 0.23 - 1.29 milligrams per liter.

Voter approved improvements continue



Approximately 1,000 linear feet of existing 20" cast iron pipe water main was relocated and replaced with 20" ductile iron pipe on 14th Street between Central Avenue and Baltimore Avenue to make way for construction of an underground walkway access to Bartle Hall. This is part of the Bartle Hall Ballroom Expansion Project. The line relocation cost was \$200,000.

Voters approve \$250 million in water bonds

On August 2, 2005, voters overwhelmingly approved the Water and Sewer Revenue Bond Issues by a 3-to-1 margin.

With the approval of voters, the City Council may authorize the sale of the bonds over a 7 to 10-year period based on the availability of water revenues. The Water Services Department will then use the proceeds from the bond sales as they become available to fund proposed projects.

The following projects will be funded by these bonds as funds become available:

- *Transmission Main Upgrades & Expansion* - \$97 million for upgrades city-wide and transmission system expansion in Jackson and Cass counties
- *Small Main Replacement Program* - \$41.5 million
- *Pump Station & Reservoir Improvements* - \$22.5 million
- *Water Treatment Plant Improvements* - \$20.5 million to ensure continued high water quality and meet any necessary regulatory developments
- *Water Main Extensions and Relocations* - \$16 million to construct water main extensions to serve new developments and relocations due to other city improvements
- *Raw Water Intake Improvements* - \$30 million to ensure the reliability of our river water supply

During 2005, the Department completed a number of transmission main projects, and small main replacements city-wide to improve water service and reliability.

Water main replacements and upgrades

North Oak Transmission Main - Phase 1, Englewood Road to NE 65th Street - Numerous breaks and high demand on the existing main caused the need for replacement. The existing 16-inch water main was replaced with 6,100 linear feet of 24-inch ductile iron pipe. This water main supplies the water needed in the Northland. The cost of this project was \$1.6 million.

North Main Water Main Replacement - More than 660 linear feet of 36-inch water main

see **'improvements'** p. 7

There's MOre to the story



Wells located along the Missouri River supplement water from the river with water from the aquifer. The well water helps to maintain consistent water temperature throughout the year.

Kansas City, Missouri's water source is 94% river water drawn from the 'Mighty MO,' the Missouri River. The other 6% comes from wells dug deep into nearby geologic formations that naturally filter the water.

As water journeys through its cycle, it trickles over the surface or through the ground. It dissolves naturally occurring minerals and radioactive material and can pick up substances resulting from the presence of animals or from human activity. Before we transform the 'Mighty MO' into clean, safe water, source water contaminants that may be present include:

- microbial contaminants such as viruses, bacteria and protozoa which may come from wastewater treatment plants, septic systems, agricultural livestock operations and wildlife
- inorganic contaminants such as salts and metals that 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 that may come from a variety of sources such as agriculture, stormwater runoff and residential lawn care
- organic chemical contaminants, that may come from a variety of sources such as petroleum production, gas stations, urban stormwater runoff or septic systems; or may also be naturally occurring
- radioactive contaminants, which can be naturally occurring, can also be the result of oil and gas production and mining activities.

Your Kansas City, Missouri Water Services Department monitors the Missouri River and upstream events to ensure our treatment process addresses any contamination concerns that may arise because of changing river conditions.

'improvements' from p. 2

and 725 linear feet of water main was replaced on North Main, between Briarcliff and Evansdale. The cost of this project was \$320,000.

14th Street Water Main Relocation - Approximately 1,000 linear feet of existing 20" cast iron pipe water main was relocated and replaced with 20" ductile iron pipe on 14th Street between Central Avenue and Baltimore Avenue to make way for construction of underground walkway access to Bartle Hall. This is part of the Bartle Hall Ballroom Expansion Project. The line relocation cost was \$200,000.

Small Main Replacement Program

More than 120 miles of undersized water mains serving neighborhoods throughout the City are being replaced as part of a \$35 million, multi-year main replacement program.

The replacement project will improve water service to customers, enhance fire protection and reduce the number of water main breaks. Many of the mains being replaced are 50 to 60 years old and, in some cases, were installed in neighborhoods before annexation by Kansas City.

- *Bannister Acres Area Phase 1 Small Main Replacement - Hillcrest Road to Stark Avenue and East 91st Street to East 107th Street*. Fifteen thousand linear feet of 6-inch and 8-inch ductile iron pipe was installed and 117 services were transferred from the existing main to the new main. The cost of this project was \$1.6 million.
- *Brooklyn Avenue - 82nd Terrace to 83rd Terrace Small Main Replacement* - A total of 2,500 linear feet of 6-inch water main and 15 water services were transferred in this project. The cost for this project was \$90,000.
- *Small Main Replacement and Sanitary Sewer Extension for 97th and Eastern/Bannister Acres* - A total of 14,000 linear feet of sewer main and 4,600 linear feet of 6-inch water main was installed and 25 water services were transferred from the existing main to the new main in this project. The cost of the sewer main extension was \$1.8 million and the new water main was \$392,252.

Water Quality Data Table 2005

| Parameter | Date Tested | Violation | Units | MCL | MCLG | KCMO Avg. | KCMO Range | Source in Drinking water | Health Effects |
|--|-------------|-----------|-------|--------|---------|-----------|-------------|---|---|
| General Chemistry | | | | | | | | | |
| Chlorine (as chloramine) | 2005 | NO | ppm | MRDL=4 | MRDLG=4 | 2.32 | 1.86 - 2.68 | water additive used to control bacteria | Some people who drink water containing chlorine well in excess of the MDRL could expect irritating effects to their eyes and/or nose or stomach discomfort. |
| Cyanide | 2005 | NO | ppb | 200 | 200 | 1 | 0-11 | discharge from steel/metal factories, fertilizer factories, plastic factories | Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid. |
| Fluoride | 2005 | NO | ppm | 4 | 4 | 0.82 | 0.23-1.29 | erosion of natural deposits, discharge from fertilizer and aluminum factories, water additive which promotes strong teeth | Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pains and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth and occurs only in the developing teeth before they emerge from the gums. |
| Nitrate | 2005 | NO | ppm | 10 | 10 | 1.44 | 0 - 4.26 | runoff from fertilizer use, leaching from septic tanks, sewage, erosion of natural deposits | Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill, and if untreated, could die. Symptoms include shortness of breath and blue baby syndrome. |
| Organics | | | | | | | | | |
| Alachlor | 2005 | NO | ppb | 2 | 0 | ND | ND | runoff from herbicide used on row crops | Some people who drink water containing alachlor well in excess of the MCL over many years could experience problems with their liver, kidney, spleen, lining of the nose and eyelids, or may develop cancer. |
| Atrazine | 2005 | NO | ppb | 3 | 3 | 0.2 | 0 - 1.2 | runoff from herbicide used on row crops | Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties. |
| Methylene Chloride | 2005 | NO | ppb | 5 | 0 | ND | ND | often used as a paint remover, solvent or cleaning agent | Some people who drink water containing methylene chloride may develop liver damage or cancer. |
| Metals | | | | | | | | | |
| Antimony | 2005 | NO | ppb | 6 | 6 | ND | ND | found in natural deposits, often used as a flame retardant | Some people who drink water containing antimony well in excess of the MCL over many years may develop cancer. |
| Barium | 2005 | NO | ppb | 2000 | 2000 | 13 | 7 - 26 | discharge of drilling waste, erosion of natural deposits, discharge from metal refineries | Some people who drink water containing barium in excess of the MCL over many years could experience an increase in blood pressure. |
| Selenium | 2005 | NO | ppb | 50 | 50 | ND | ND | discharge from petroleum refineries, metal refineries and mines; erosion of natural deposits | Selenium is an essential nutrient, but some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail loss, numbness in fingers or toes, or problems with their circulation. |
| Turbidity & Total Coliform Testing | | | | | | | | | |
| Turbidity (Highest single turbidity - June 2005) | 2005 | NO | ntu | TT | TT | 0.09 | 0.01 - 0.29 | 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. |
| Turbidity - (Lowest monthly % <0.3) | 2005 | NO | % | >95% | TT | 100% | 100% | 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. |
| Total Coliform Highest Monthly % Positive - March 2005 | 2005 | NO | % | <5% | NA | 0.20 | 0 - 1.07 | naturally occurring in the environment | Coliform are bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present. |
| Disinfection Byproducts | | | | | | | | | |
| Total Trihalomethanes - TTHMs | 2005 | NO | ppb | 80 | NA | 5.37 | 0.60 - 19.0 | byproduct of drinking water disinfection | Some people who drink water containing trihalomethanes (TTHMs) in excess of the MCL over many years could experience liver, kidney or central nervous system problems or an increased risk of cancer. |
| Total Haloacetic Acids - THAA5 | 2005 | NO | ppb | 60 | NA | 14.4 | 8.50 - 25.4 | byproduct of drinking water disinfection | Some people who drink water containing Total Haloacetic Acids (THAA5) in excess of the MCL over many years could have an increased risk of cancer. |
| Radiological | | | | | | | | | |
| Radium 226+228 | 2005 | NO | pCi/L | 5 | 0 | BQL | ND - BQL | | |

| Parameter | Date Tested | Violation | Units | MCL | MCLG | KCMO Avg. | KCMO Range |
|--------------------------------------|-------------|-----------|-----------|-----|------|-----------|-------------|
| Unregulated (but of interest) | | | | | | | |
| Acetochlor | 2005 | NA | ppb | NA | NA | ND | ND |
| Alkalinity | 2005 | NA | ppm | NA | NA | 36 | 25-62 |
| Ammonia | 2005 | NA | ppm | NA | NA | 0.319 | 0.140-0.710 |
| Cryptosporidium | 2005 | NA | oocysts/L | NA | NA | ND | ND |
| Giardia | 2005 | NA | oocysts/L | NA | NA | ND | ND |
| Hardness, total | 2005 | NA | ppm | NA | NA | 102 | 56-126 |
| pH | 2005 | NA | S.U. | NA | NA | 10.0 | 9.5-10.4 |
| Radon - 222 | 2005 | NA | pCi/L | NA | NA | ND | ND |
| Sodium | 2005 | NA | ppm | NA | NA | 46.7 | 30.3-57.1 |
| Sulfate | 2005 | NA | ppm | NA | NA | 135 | 38-203 |

Lead & Copper Rule Household Testing*

| | Date Tested | Violation | Units | Action Level | |
|------------------------------------|-------------|-----------|-------|--------------|---------------------------|
| Distribution System Testing | | | | | |
| Lead | 2004 | NO | ppb | AL=15 | 5 (90th Percentile**) |
| Copper | 2004 | NO | ppb | AL=1300 | 29 (90th Percentile**) |

* Distribution testing for lead and copper are required by Missouri Department of Natural Resources every three years..

**Lead and Copper 90th Percentile: Out of every 10 homes sampled, 9 were at or below this level.

Table Information

The table on the preceding page represents analytical results for regulated compounds, none of which were detected at levels of regulatory concern. Each column shows the results of tests on our finished water. They represent the average and range of all values measured for each compound and the maximum and minimum levels detected in all measurements.

This report is based upon tests conducted by Kansas City, Missouri Water Services. Terms used in the Water Quality table and in other parts of this report are defined here:

Action Level or AL: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

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

Maximum Contaminant Level or MCL: 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.

Maximum Residual Disinfectant Level or 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 or MRDLG: The level of a disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Treatment Technique or TT: A required process intended to reduce the level of a contaminant in drinking water.

Table Key

- AL = action level
- BQL = below quantifiable limit
- MCL = maximum contaminant level
- MCLG = maximum contaminant level goal
- NA = not applicable
- ND = not detectable
- NTU = nephelometric turbidity units
- oocyst = The presence of *Cryptosporidium* in water is measured by counting the number of oocysts present in the water. Each oocyst contains four of the *Cryptosporidium* organisms that can be released in the intestines and produce the gastrointestinal illness associated with the disease.
- pCi/L = picocuries per liter (a measure of radioactivity)
- ppm = parts per million or milligrams per liter (mg/L)
- ppb = parts per billion or micrograms per liter (ug/L)
- S.U. = standard unit

Cryptosporidium Testing

Cryptosporidium is a protozoan naturally present in bodies of surface water throughout the world. While our testing has shown that low levels of *Cryptosporidium* may sometimes be present in our source water, evidence of *Cryptosporidium* has never been found in Kansas City, Missouri Water Services Department treated water. However, *Cryptosporidium* organisms cannot be guaranteed to be 100% eliminated by current conventional treatment methods. People with healthy immune systems who ingest *Cryptosporidium* likely will not become ill; or, if they do, they will usually recover from the intestinal flu-like symptoms that *Cryptosporidium* can cause within 7-20 days. However, people whose immune systems might be compromised—in-

cluding people undergoing chemotherapy, people who have undergone organ transplants, or people with HIV/AIDS – should seek advice about drinking water from their health care providers.

Lead and Copper Testing

Kansas City has no lead containing lines in its distribution system. Because our action levels for lead and copper at our customers taps are well below federal maximum levels, we are only required to test samples from the distribution system every three years. We appreciate the cooperation of our customers who participate in our triennial lead and copper testing program.

Radon Testing

Radon is a radioactive gas that occurs naturally in ground water all over the United States. It cannot be seen, tasted or smelled. At

high exposure levels, radon can cause lung cancer. During testing in 2005, our water had no detectable (ND) levels of radon. This is well below safety standards and should not be a cause for concern.

The Missouri Department of Natural Resources has prepared a Source Water Assessment for Kansas City. This assessment uses a variety of data to identify the potential for source water contamination. Further information about the assessment may be obtained from MDNR or at <http://maproom.missouri.edu/swi/maps/pwssid.htm> and then search for PWSSID MO-1010415.

We treat you right



The Kansas City, Missouri Water Services Treatment Plant was constructed in 1925 as a modern innovation in water treatment and was the City's largest capital expenditure when built. Today, the plant has a capacity to treat 240 million gallons per day.

The highest quality water requires the highest quality treatment process. Ours is state-of-the-art. Here's how we do it:

Step one is called coagulation and sedimentation. River water, which passes through a series of bar and wire mesh screens to remove any large debris, is mixed with well water. A chemical is then added to remove organic compounds that may affect your water's taste and odor. Chemicals called coagulants create "floc" by bonding the silt, dirt and other organic materials together, aiding in their removal. These accumulations of river material settle to the bottom, where they are discarded. The water is now much clearer.

Next, we soften. This step of the pro-

cess removes minerals by agitating the water after adding softening chemicals. When more floc is created we remove it. Chlorine, as chloramine, is also added to ensure that your water is properly disinfected.

Step three is stabilization. To prevent scaling, a build-up of calcium carbonate in the pipes, more ingredients are added.

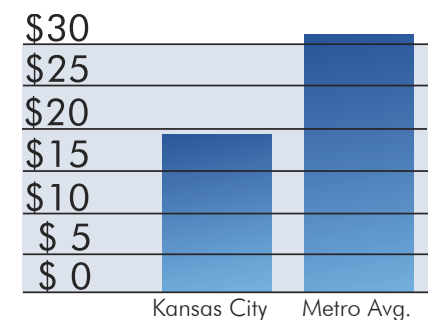
Finally, we filter. Prior to this final step, your water has spent 28 hours in the treatment facility. Polishing, filtering water through 30 inches of graded sand and gravel, is the last thing we do. This assures you that remaining traces of silt, mud or chemical leftovers will be removed.

Your Kansas City water is now clean and ready for transportation through pump stations, distribution mains and water tow-

ers throughout the city ... and finally to your tap. Enjoy!

Quality Assurance for a Small Price

Compare the average monthly charge of Kansas City metro area water utilities with the average monthly charge of Kansas City, Missouri Water Services for 800 cubic feet (5,984 gallons) of water.





**4800 E. 63rd Street
Kansas City, MO 64130
www.kcmo.org/water**

**PRSR STD
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Este informe contiene la información importante sobre la calidad del agua en su comunidad. Hable por favor con alguien que puede traducirlo para usted.

Bản báo cáo này chứa đựng những tin tức quan trọng về chất lượng của nước tại địa phương của quý vị.
Xin quý vị vui lòng nói chuyện với bạn bè của quý vị để nhờ họ thông dịch cho quý vị hiểu.

Kansas City, Missouri Water Services is funded entirely by user fees, not tax dollars.

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In our 125+ years of providing water to our community, your Kansas City, Missouri Water Services Department has never been cited for a violation of a federal or state regulation. The Missouri Department of Natural Resources sets the state regulations regarding water contamination. We meet or exceed every one. The Environmental Protection Agency requires we test for 181 contaminants. We test for more than 300!

Because of our reputation, many outside agencies such as the City of Belton, Raytown Water Company and many Kansas City area building contractors, send their water to our full service lab for testing. Why? They trust us. We've earned that trust due to our unflinching commitment to the highest standards – yours.

This report is provided in accordance with mandates from the Environmental Protection Agency and the Missouri Department of Natural Resources.