



City of Nichols Hills

2016

Annual Drinking Water

Quality Report

PWSID 2005501

We are very pleased to provide you with this year's Annual Water Quality Report. We want to keep you informed about the excellent water and services we have delivered to you over the past year. Our goal is and always has been, to provide to you a safe and dependable supply of drinking water at a responsible and reasonable rate. Our water source is ground water drawn from 23 water wells located within and east of the City of Nichols Hills. The water wells are 500 to 800 feet deep and pump from the Garber-Wellington Aquifer. We have a source water protection plan that shows a low risk for contamination. Additionally, more information such as potential sources of contamination is listed later in this report.

The City of Nichols Hills routinely monitors for constituents in your drinking water according to Federal and State laws. The water quality table (below) shows the results of our monitoring for the period of January 1st, to December 31st, 2016. (Some of our data may be more than one year old because the state allows us to monitor for some contaminants less often than once per year.) All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

The City of Nichols Hills encountered an issue last year during our high demand months and we exceeded the Federal limits on our arsenic levels. We received a 13ppb Arsenic level with the maximum contaminant level (MCL) being 10ppb which placed us into monitoring and a violation for our running annual average (July 1, 2015 –June 30, 2016). Attached you will find a copy of this violation. Since then, we have taken actions to resolve the issue. Nichols Hills has abandoned four of the lowest quality wells and replaced them with better quality wells. You may have seen us working on these wells in town as the old wells were pulled, new wells were drilled, and new buildings and fencing built around them. Each well can produce approximately 150 gallons per minute and pump from 500-700 feet underground. Nichols Hills has done studies and zone testing on these wells to ensure the safest and highest quality water for our consumers. Our Arsenic levels have dropped significantly. The two following quarterly samples were BPQL (Below Practical Quantitation Limit), meaning the levels were lower than the instrument could detect. Our current Running Annual Average is 2.415 ug/L, well below the limit of 10.0 ug/L

This report shows our water quality and what it means. We have a high quality water at very competitive water rates and feel we offer a very high quality service. If you have any questions about this report or concerning your water utility, please contact David White (Chief Well Operator) at 405-843-5222. We want our valued customers to be informed about their water utility. If you would like to learn more, please attend any of our regularly scheduled meetings. They are held at City Hall on the second Tuesday of every month at 5:30 PM

WATER QUALITY DATA TABLE

The following table lists all of the drinking water contaminants we detected for the calendar year of this report. The presence of 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 in the calendar year of the report.

TEST RESULTS

Contaminant	Violation Y/N	Highest Level Detected	Range Detected	MCL	MCLG	Likely Source of Contamination
Microbiological Contaminants						
1. Total Coliform Bacteria (System takes <40 monthly samples)	N	0		5% positive 1 positive	0	Naturally present in the environment
2. Fecal coliform and E.coli	N	0 samples		a routine sample and repeat sample are total coliform positive, and one is also fecal coliform or E. coli positive	0	Human and animal fecal waste
Radiochemical Contaminants						
3. Gross Beta (pCi/L)	N	14.5	6.25-14.5	4	0	Decay of natural and man-made deposits
4. Gross Alpha (pCi/L)	N	24.6	0-24.6	15	0	Erosion of natural deposits
5. Combined Radium 226/228 (pCi/L)	N	3.43	1.24-3.43	5	0	Erosion of natural deposits
6. Uranium (pCi/L or ug/l)	N	12	11-47.3	30 ug / L	0	Erosion of natural deposits
Inorganic Contaminants						
7. Arsenic (ppb)	Y	13	0-14.9	10	0	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
8. Barium (ppb)	N	.036	.036-.036	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
9. Beryllium (ppb)	N	<2		4	4	Discharge from metal refineries and coal-burning factories; discharge from electrical,

10. Chlorine (ppm)	N	1	1-1	MRDL = 4	MRDLG = 4	Water additive used to control microbes
11. Chromium (ppb)	N		30.9	100	100	Discharge from steel and pulp mills; erosion of natural deposits
12. Copper (ppm)	N			AL=1.3	1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
13. Cyanide (ppb)	N	<10		200	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
14. Fluoride (ppm)	N	<4		4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
15. Lead (ppb)	N	0		AL=15 Action Level – 90% of samples must be below this level	0	Corrosion of house hold plumbing systems, erosion of natural deposits
16. Mercury (ppb) (inorganic)	N	<.1		2	2	Erosion of natural deposits; discharge from refineries and factories;
17. Nitrate - NO ₃ (ppm) (as Nitrogen)	N	0.32	0.15-0.32	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
18. Nitrite - NO ₂ (ppm) (as Nitrogen)	N	0		1	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
19. Selenium (ppb)	N	5.5	5.5-5.5	50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Volatile Organic Contaminants						
20. Benzene (ppb)	N	<.5		5	0	Discharge from factories; leaching from gas storage tanks and landfills
21. Carbon tetrachloride (ppb)	N	<.5		5	0	Discharge from chemical plants and other industrial activities

22. Chlorobenzene (ppb)	N	<.5		100	100	Discharge from chemical and agricultural chemical factories
23. o-Dichlorobenzene (ppb)	N	<.5		600	600	Discharge from industrial chemical factories
24. p-Dichlorobenzene (ppb)	N	<.5		75	75	Discharge from industrial chemical factories
25. 1,2-Dichloroethane (ppb)	N	<.5		5	0	Discharge from industrial chemical factories
26. 1,1-Dichloroethylene (ppb)	N	<.5		7	7	Discharge from industrial chemical factories
27. cis-1,2-Dichloroethylene (ppb)	N	<.5		70	70	Discharge from industrial chemical factories
27. trans - 1,2 -Dichloroethylene (ppb)	N	<.5		100	100	Discharge from industrial chemical factories
28. Dichloromethane (ppb)	N	<.5		5	0	Discharge from pharmaceutical and chemical factories
29. 1,2- Dichloropropane (ppb)	N	<.5		5	0	Discharge from industrial chemical factories
30. Ethylbenzene (ppb)	N	<.5		700	700	Discharge from petroleum refineries
31. Haloacetic Acids (HAA5) (ppb)	N	6		60	N/A	By-product of drinking water chlorination
32. Styrene (ppb)	N	<.5		100	100	Discharge from rubber and plastic factories; leaching from landfills
33. Tetrachloroethylene (ppb)	N	<.5		5	0	Leaching from PVC pipes; discharge from factories
34. 1,2,4- Trichlorobenzene (ppb)	N	<.5		70	70	Discharge from textile- finishing factories
35. 1,1,1 - Trichloroethane (ppb)	N	<.5		200	200	Discharge from metal degreasing sites and other factories
36. 1,1,2 - Trichloroethane (ppb)	N	<.5		5	3	Discharge from industrial chemical factories
37. Trichloroethylene (ppb)	N	<.5		5	0	Discharge from metal degreasing sites and other factories
38. TTHM [Total trihalomethanes] (ppb)	N	4	0 – 7.5	80	N/A	By-product of drinking water chlorination
39. Toluene (ppm)	N	<.5		1	1	Discharge from petroleum factories
40. Vinyl Chloride (ppb)	N	<.5		2	0	Leaching from PVC piping; discharge from plastics factories
41. Xylenes (ppb)	N	<.5		10	10	Discharge from petroleum factories; discharge from chemical factories

In this table you will find many terms and abbreviations you might not be familiar with. To help you better understand the terms we have provided the following definitions:

Non-Detects (ND): Laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l)

Parts per billion (ppb) or Micrograms per liter (ug/l)

Parts per trillion (ppt) or Nanograms per liter (nanograms/l)

Parts per quadrillion (ppq) or Picograms per liter (Picograms/l)

Picocuries per liter (pCi/L): Picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr): Measure of radiation absorbed by the body.

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

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

Treatment Technique (TT): (mandatory language) Treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level (MCL): (mandatory language) The MCL is the highest level of a contaminant that is allowed in drinking water.

Contaminant definitions and health effects:

Microbiological Contaminants:

-Total Coliform. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially- harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.

-Fecal coliform/E -Coli. Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.

Radiochemical Contaminants:

-Gross Beta. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.

-Gross Alpha. Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.

-Combined Radium 226/228. Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.

-Uranium. Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity

Inorganic Contaminants:

-Antimony. Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

-Arsenic. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

-Barium. Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

-Beryllium. Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.

-Bromate. Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.

-Cadmium. Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

-Chloramines. Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.

-Chlorine. Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their

eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort. -Chlorite. Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.

-Chlorine Dioxide. Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.

-Chromium. Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

-Copper. Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.

-Cyanide. 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. Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.

-Lead. Infants and children who drink water containing lead in excess of the action level 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.

-Mercury (inorganic). Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

-Nitrate. Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

-Nitrite. Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

-Selenium. Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

-Thallium. Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.

Volatile Organic Contaminants:

-Benzene. Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.

-Carbon Tetrachloride. Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.

-Chlorobenzene. Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.

-o-Dichlorobenzene. Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.

-p-Dichlorobenzene. Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.

-1,2-Dichloroethane. Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.

-1,1-Dichloroethylene. Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.

-Cis-1,2-Dichloroethylene. Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.

-Trans-1,2-Dichloroethylene. Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.

-Dichloromethane. Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.

-1,2-Dichloropropane. Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.

-Ethylbenzene. Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.

-Haloacetic Acids. Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.

-Styrene. Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.

-Tetrachloroethylene. Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.

-1,2,4-Trichlorobenzene. Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.

-1,1,1-Trichloroethane. Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.

-1,1,2-Trichloroethane. Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.

-Trichloroethylene. Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.

-THMs [Total Trihalomethanes]. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

-Toluene. Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.

-Vinyl Chloride. Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.

-Xylenes. Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

-Atrazine. 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.

What does this mean?

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). 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 before we treat it 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.
- *Radioactive contaminants, which are naturally occurring.
- *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.

MCLs are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

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 microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

We at the City of Nichols Hills work around the clock to provide top quality water to every tap. Please call our office if you have any questions 405-843-5222.

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

City of Nichols Hills

PWSID No. OK2005501 NOV No. P-2005501-17-1

Had Levels of Arsenic above Drinking Water Standards

Our water system recently violated a drinking water standard. Although this is not an emergency, as our customers, you have a right to know what happened, what you should do, and what we did (are doing) to correct this situation.

We routinely monitor for the presence of drinking water contaminants. The table below shows the average amount of arsenic, in water samples from our system, exceeded the standard, or maximum contaminant level (MCL), for arsenic. The standard for arsenic is 0.010 mg/L.

Sample Site	Twelve Month Period	Arsenic Running Annual Average
All Wells But 7 (POE01)	July 1, 2015 to June 30, 2016	0.013 mg/L

What should I do?

- There is nothing you need to do. **You do not need to boil your water** or take other corrective actions. However, if you have specific health concerns, consult your doctor.
- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from your health care providers about drinking this water.

What does this mean?

This is not an emergency. If it had been, you would have been notified within 24 hours. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

What is being done?

Nichols Hills has abandoned four of the lowest quality wells and replaced them with better quality wells. You may have seen us working on these wells in town as the old wells were pulled and the new wells were drilled and new buildings and fencing built around them. Each well can produce approximately 150 gallons per minute and pump from 500-700 feet underground. Nichols Hills has done studies and zone testing on these wells to ensure the safest and highest quality water for our consumers. Our Arsenic levels have dropped significantly, the two following quarterly samples were BPQL (Below Practical Quantitation Limit) meaning the levels were lower than the instrument could detect. Our current Running Annual Average is 2.415 ug/L well below the limit of 10.0 ug/L

For more information, please contact David White, Chief Well Operator at 1001 NW 75th street Nichols Hills, OK 73116-6403 or 405-843-5222

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by City of Nichols Hills (PWSID No. OK2005501).