

CITY OF BROOKHAVEN ♦ WATER DEPARTMENT

2017 ANNUAL WATER QUALITY REPORT

PWS ID# 0430002



Is my water safe?

Yes, it is our job to provide safe drinking water to the City of Brookhaven. Should a problem arise, we will notify the public through newspapers, radio and television. This notification is part of our job to keep the public informed. The water system is comprised of several pumps, chemical feed systems, and miles of underground piping. It is monitored by a computerized control system which can send alarms to select personnel 24 hours per day/ 7 days per week should a problem occur. Personnel are prepared to respond to these alarms should they occur after business hours, holidays and weekends. The system can be monitored and adjusted remotely as well as on site through a secure connection. As customers, you can assist us in keeping the system safe. Please review "**You can Help**" on page 4. We are pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality. We are committed to providing you with information because informed customers are our best allies.

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. People with severely compromised immune systems 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/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

What is the source of the water?

Our water source is the city of Brookhaven Water Department, which has 9 wells. Our wells draw from the Miocene series, citronella formation.

Source water assessment and its availability

Our source water assessment has been completed. One well was ranked high, seven wells moderate, and one well low in terms of susceptibility to contamination. Please contact our office at 601-833-7721 if you have any questions.

Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791).

How can I get involved?

We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future. Board meetings are the first and third Tuesday of each month at the **Lincoln County / Brookhaven Government Complex** located at 301 First Street, Brookhaven.

Description of the water treatment process

Your water is ground water pumped from wells with depths ranging from 160 feet to 1200 feet with an average depth of about 500 feet. The raw water is very soft, and can be aggressive to plumbing if not treated to correct this problem.

The initial stage of the treatment process for 6 of the wells is pH adjustment. pH (potential of hydrogen) is a measure of the acidity or alkalinity of an aqueous solution. The ground water in these 6 wells has a low pH. The pH is raised by the addition of a food grade hydrated lime to minimize corrosion. All 9 of the wells are then disinfected by the use of chlorine to kill (disinfect) dangerous bacteria and microorganisms that may be in the water. Water leaving this type of disinfection process will retain a small amount of chlorine residual. Our staff is able to monitor the chlorine residual in the system to insure it remains a safe product from treatment site to the customers tap. Disinfection is considered to be one of the major public health advances allowing public water supplies to exist in the past century.

The final treatment stage is that of fluoridation. Fluoridation is accomplished by the addition of a controlled amount of fluoride to promote dental health. Brookhaven has fluoridated the water supply for over 50 years. This in line with national policy as approximately 75% of the US population is served by fluoridated water supplies. Because of its contribution to the large decline in cavities in the United States since the 1960s, The US Centers for Disease Control (CDC) named community water fluoridation one of 10 great public health achievements of the 20th century.

In addition to the treatment processes described above, the city must meet a rigorous monitoring schedule to insure the water meets Federal and State standards. This includes routine microbiological testing (monthly) and other routine monitoring (quarterly, semi-annual and annual) for radiological and chemical contaminants.

Water conservation tips

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers - a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If

it seeps into the toilet bowl without flushing, you have a leak..Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.

- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
- Visit www.epa.gov/watersense for more information.

Source Water Protection Tips

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's How to Start a Watershed Team.
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people **"Dump No Waste - Drains to River"** or **"Protect Your Water."** Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

Additional Information for Fluoride

To comply with the "Regulation Governing Fluoridation of Community Water Supplies", MS0430002 is required to report certain results pertaining to fluoridation of our water system. The number of months in the previous calendar year that average fluoride samples results were within the optimal range of 0.7-1.3 ppm was 4 The percentage of fluoride samples collected in the previous calendar year that was with the optimal range of 0.7-1.3 ppm was 50%. The City of Brookhaven has just completed the installation of an upgrade on all four of our fluoridation systems. The State Health Department awarded the City a 100% grant to upgrade these fluoridation systems.

Additional Information for 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 BROOKHAVEN WATER DEPARTMENT 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>

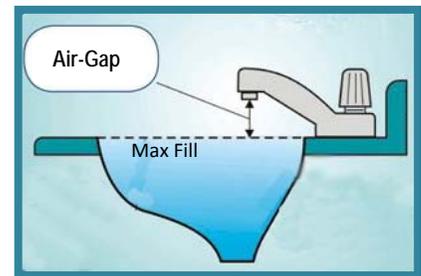
Cross Connection Control Program

The purpose of this program is to determine whether a cross-connection may exist at your home or business. A cross connection is an unprotected or improper connection to a public water distribution system that may cause contamination or pollution to enter the system. When identified, these may be controlled by installation of a back-flow prevention device. We are responsible for enforcing cross-connection control regulations and insuring that no contaminants can, under any flow conditions, enter the distribution system. If you have any of the devices listed below please contact us so that we can discuss the issue, and if needed, survey your connection and assist you in isolating it if that is necessary.

- Boiler/ Radiant heater (water heaters not included)
- Underground lawn sprinkler systems with chemical feed
- Additional source(s) of water on the property
- Decorative pond
- Watering trough

You Can Help

We request all of our customer's assistance with protecting our water supply. Please insure that no hoses are submerged in any container when connected to the water supply. This includes dishwasher hoses, hand held shower hoses, hoses to faucets in sinks, hoses used to fill swimming pools or common garden hoses. If it is necessary to leave a faucet running to avoid freezing pipes, please inspect all faucets both outdoors and indoors to insure all hoses are disconnected and faucets have an air gap. This is not only protecting your neighbors, but also protecting yourself and your family from potential self contamination. A water system break can cause a sudden drop in pressure. If the break is serious or circumstances are right such as a heavy demand on the water system, the water can be siphoned back into the system unless there is an air gap to break the siphon. There are small inexpensive (\$6-\$8) antisiphon devices similar to the one shown to the left that may be purchased at the local hardware stores and can be installed by customers. While these are not as effective as the commercial backflow preventers, they afford some protection and the installation is a simple. Screw it onto the end of the outdoor faucet and tighten the set screw.



Antisiphon Device

screw.

Water Quality Data Table

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions below the table.

Microbial Contaminants							
Bacteria	MCL	MCLG	Your Water	Range Detected	Sample Year	Violation	Likely source of contamination
<i>E. coli</i>	One positive sample	0	2 positive samples in January	N/A	2017	YES	Human or animal fecal waste
Free Chlorine Residual	MRDL 4 ppm [~]	MRDLG 4 ppm	1.7 ppm	0.85 to 3.0 ppm	2017	NO	Water additive used to control microbes

Inorganic Contaminants								
Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Range		Sample Date	Violation	Typical Source
				Low	High			
Fluoride (ppm)	4	4	0.193	NA	0.193	2016	NO	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Nitrate [measured as Nitrogen] (ppm)	10	10	0.86	NA	0.86	2017	NO	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite [measured as Nitrogen] (ppm)	1	1	<0.02	NA	<0.02	2017	NO	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrate + Nitrite [measured as Nitrogen] (ppm)	10	10	0.86	NA	0.86	2017	NO	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

Disinfectants & Disinfectant By-Products

(There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your	Range		Sample Date	Violation	Typical Source
				Low	High			
Chlorine (as Cl ₂) (ppm)	4	4	1.70	0.85	3.00	2017	NO	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60	7	NA	7	2017	NO	By-product of drinking water chlorination
Total Trihalomethanes TTHM's (ppb)	NA	80	<4	NA	<4	2017	NO	By-product of drinking water disinfection

Raw Water Samples

Parameter	1	3	5	6	8	9	Well ID
	113 Willard	624 N Railroad	420 N Railroad	624 N Railroad	1065 Fender Dr	660 Saints Tr	Location
	8/11/2017	8/11/2017	8/11/2017	8/11/2017	8/11/2017	8/11/2017	Date
Color	5.0	5.0	5.0	5.0	5.0	5.0	Units
pH	6.4	6.4	6.4	6.4	7.6	7.6	SU
Alkalinity	28.40	22.70	12.50	25.80	113.00	99.70	mg/l
Chloride	5.28	4.10	17.26	32.66	2.65	2.96	mg/l
Sulfate	3.17	2.07	6.16	9.93	11.37	13.38	mg/l
Fluoride	0.09	0.08	0.05	0.05	0.13	0.13	mg/l
Carbon Dioxide	24.00	20.00	11.00	23.00	6.00	6.00	mg/l
Iron	0.62	0.02	0.03	0.07	0.03	0.15	mg/l
Iron (field)	0.50	<0.10	0.10	<0.10	0.10	0.10	mg/l
Magnesium	1.33	1.10	1.72	3.27	0.02	0.0189	mg/l
Manganese	0.0039	0.0003	0.0020	0.0010	0.0010	0.0016	mg/l
Calcium	3.79	3.20	4.46	8.01	0.36	0.415	mg/l
Sodium	8.12	6.45	14.85	21.45	63.39	57.00	mg/l
Calculated Sodium	9.20	7.40	11.00	21.80	5805.00	53.70	mg/l
Potassium	2.11	1.89	1.17	1.61	0.51	0.47	mg/l
Residue, Total Filterable	41	33	53	98	147	134	mg/l
Hardness	14.8	12.5	18.2	33.6	1.4	1.0	mg/l

Health effects for total coliforms

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter drinking water distribution system. We found coliform indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments."

Health effects for *E. coli*

E. coli is a type of bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly and people with severely compromised immune systems. We found *E. coli* bacteria indicating the need to look for potential problems in the water treatment or distribution system. When this occurs we are required to conduct assessments to identify problems and to correct any problems that were found during these assessments.

Water System Problem - Boil Water- - January 2017

While conducting our required testing, in early January 2017, we received two results showing positive for *E Coli* bacteria and two samples showing positive for Total coliform. This indicated the need to look for potential problems in water treatment or distribution system. Upon discovery of the *E Coli* bacteria, a system wide boil water notice was issued. This remained in effect until the system tested clear of any coliform bacteria. As a result of this problem we were required to conduct a Level 2 assessment to determine if there were problems within the water system, this assessment required a detailed evaluation of the water treatment and distribution system. Had any problems been identified, the second part of the assessment required the correction of any deficiency detected.

The Level 2 assessment was completed January 27, 2017. We determined there were no problems with the water treatment system or the wells. All systems were tested and no contamination was detected within the treatment system or any of the wells. It was then determined that the problem was most likely due to contamination of the distribution system. All samples that failed were plotted on a City water system map in conjunction with any know problems due to line failures. Based on this mapping of the problem samples, this appears to be related to a main line break resulting from freezing weather. Due to temperature dropping to about 18° during this period, many homes were leaving faucets dripping to avoid freezing pipes. Review of the maps indicated there had been a main line failure near the sample sites that had positive coliform results. While the repairs were made with the line under pressure, the pressure drop a couple of blocks from the site could have caused the contamination. (Please refer to **You Can Help** on page 4) This scenario is further affirmed by the fact that there were no corrective actions required other than a complete flushing the distribution system. This problem was exacerbated by the loss of a well pump across town during the Christmas holidays. The well pump, which was over 650 feet deep, had to be replaced which took several months. After the system was flushed the problem subsided, even with the well out of service. Since that time the well has been replaced and new controls have been installed.

Definitions of Drinking Water Acronyms and Terms

Acronym	Term	Definition
MCLG	Maximum Contaminant Level Goal	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.
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.
TT	Treatment Technique	A required process intended to reduce the level of a contaminant in drinking water.
AL	Action Level	The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
	Variances and Exemptions	State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
MRDLG	Maximum residual disinfection level goal	The level of a drinking water 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.
MRDL	Maximum residual disinfectant level	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.
MNR	Monitored Not Regulated	A contaminant that is being monitored but has no current regulatory limit
MPL	Maximum Permissible Level	A State Assigned regulatory limit
	Level 1 Assessment	A study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in the water system
	Level 2 Assessment	A very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and /or why total coliform bacteria have been found in the water system

Definition of Units used in the Reports

Unit or Abbreviation	Definitions
ppm or mg/l	parts per million (ppm) or milligrams per liter (mg/l)
ppb or µg/l	parts per billion (ppb) or micrograms per liter (µg/l)
pCi/L	Pico Curies per liter pCi/L (a measure of radioactivity)
NA	Not Applicable
ND	Not Detected
NR	Monitoring not required, but recommended.

FOR MORE INFORMATION, PLEASE CONTACT

Contact Name:	Keith Lewis , Public Works Director
Address:	301 S First Street --Brookhaven, MS 39601
Phone ♦ Fax:	601-833-7721 ♦ 601-823-5968
E-Mail:	bhavenwater@cableone.net
Contact Name:	Ralph Augimeri, Water Treatment Operations
Address:	301 S First Street -- Brookhaven, MS 39601
Phone ♦ Fax:	601-833-5116
E-Mail:	augi@sprynet.com