



## 2016 Annual Water Quality Report

For the period of January 1 through December 31, 2016

**PWS ID Number: TX2390001**

**Telephone: 979-337-7400**

This report is intended to provide you with important information about your drinking water and the efforts made by the water system to provide safe drinking water. For more information regarding this report contact: Matthew Monfreda, Water Systems Superintendent, at 979-337-7434.

Este reporte incluye información importante sobre el agua para tomar. Para asistencia en español, favor de llamar al telefona. 979-337-7506.

The source of drinking water used by the City of Brenham is Surface Water.

### Information about Source Water Assessments

The TCEQ completed an assessment of your source water and results indicate that some of your sources are susceptible to certain contaminants. The sampling requirements for your water system are based on this susceptibility and previous sample data. Any detection of these contaminants may be found in this Consumer Confidence Report. For more information on source water assessments and protection efforts at our system, contact Matthew Monfreda. For more information about your sources of water, please refer to the Source Water Assessment Viewer available at the following URL:

<http://www.tceq.texas.gov/gis/swaview>

Further details about sources and source-water assessments are available in Drinking Water Watch at the following URL: <http://dww2.tceq.texas.gov/DWW/>

<u>Source Water Name</u>	<u>Type of Water</u>	<u>Report Status</u>	<u>Location</u>
Somerville Reservoir	Surface Water	Active	Somerville/Washington County

### Public Participation Opportunities

City Council meets on the first and third Thursday of every month at 1:00 P.M. at Brenham City Hall. To learn more about future public meetings concerning your drinking water, or to request one, please call Public Utilities at 979-337-7400.

### Water Loss Audit Results

In the water loss audit submitted to the Texas Water Development Board for the time period of January through December 2016, our system lost an estimated 72,995,624 gallons of water, which is 8% of the total gallons of water treated. If you have any questions about the water loss audit, please call 979-337-7400.

### Sources of Drinking Water

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.

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 EPAs Safe Drinking Water Hotline at 800-426-4791.

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 discharges, 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. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Contaminants may be found in drinking water that may cause taste, color, or odor problems. These types of problems are not necessarily causes for health concerns. For more information on taste, odor, or color of drinking water, please contact Matthew Monfreda at 979-337-7434.

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. We are responsible for providing high quality drinking water, but we 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 at 800-426-4791 or at:

<http://www.epa.gov/safewater/lead>

#### **SPECIAL NOTICE FOR THE ELDERLY, INFANTS AND IMMUNO-COMPROMISED PERSONS**

***You may be more vulnerable than the general population to certain microbial contaminants, such as Cryptosporidium, in drinking water. Infants, some elderly, or immunocompromised persons such as those undergoing chemotherapy for cancer; persons who have undergone organ transplants; those who are undergoing treatment with steroids; and people with HIV/AIDS or other immune system disorders, can be particularly at risk from infections. You should seek advice about drinking water from your physician or health care provider. Additional guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline at 800-426-4791.***

## Water Quality Test Results

### Definitions

The following tables contain scientific terms and measures, some of which may require explanation.

**Action Level Goal (ALG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. ALGs allow for a margin of safety.

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

**Avg.:** Regulatory compliance with some MCLs are based on running annual average of monthly samples.

**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 our 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 our water system on multiple occasions.

**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 Goal or MRDLG:** 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 contamination.

**Maximum Residual Disinfectant Level or MRDL:** 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.

**MFL:** million fibers per liter (a measure of asbestos).

**Mrem:** millirems per year (a measure of radiation absorbed by the body)

**na:** not applicable

**NTU:** nephelometric turbidity units (a measure of turbidity).

**pCi/L:** picocuries per liter (a measure of radioactivity).

**ppb:** micrograms per liter or parts per billion – or one ounce in 7,350,000 gallons of water.

**ppm:** milligrams per liter or parts per million – or one ounce in 7,350 gallons of water.

**ppt:** parts per trillion, or nanograms per liter (ng/L).

**ppq:** parts per quadrillion, or pictograms per liter (pg/L).

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

## 2016 Regulated Contaminants Detected

### Coliform Bacteria

Maximum Contaminant Level Goal	Total Coliform Maximum Contaminant Level	Highest Number of Positive Samples	Fecal Coliform or E. Coli Maximum Contaminant Level	Total Number of Positive E. Coli or Fecal Coliform Samples	Violation	Likely Source of Contamination
0	1 positive monthly sample.	0	1 positive monthly sample.	0	N	Naturally present in the environment.

### Lead and Copper

Substance	Date Sampled	MCLG	Action Level (AL)	90 <sup>th</sup> Percentile	# Sites Over AL	Units	Violation	Likely Source of Contamination
Copper	8/10/16	1.3	1.3	0.037	0	ppm	N	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems.
Lead	8/10/16	0	15	1.1	0	ppb	N	Corrosion of household plumbing systems; Erosion of natural deposits.

### Total Organic Carbon

The percentage of Total Organic Carbon (TOC) removal was measured each month and the system met all TOC removal requirements set, unless a TOC violation is noted in the violations section.

### Turbidity

Turbidity is a measurement of the cloudiness of the water caused by suspended particles. We monitor it because it is a good indicator of water quality and the effectiveness of our filtration.

Turbidity	Limit (Treatment Technique)	Level Detected	Violation	Likely Source of Contamination
Highest single measurement	1 NTU	0.26 NTU	N	Soil runoff.
Lowest monthly % meeting limit	0.3 NTU	100%	N	Soil runoff.

### Regulated Contaminants

Substance	Collection Date	Yearly Average	Lowest Single Sample	Highest Single Sample	MRDL	MRDLG	Units	Violation	Likely Source of Contamination
<b>Disinfectants</b>									
Chlorine Dioxide	2016	.06	.00	.21	.8	.8	PPM	N	Water additive used to control microbes
Chloramine	2016	3.58	.60	7.1	4.0	4.0	PPM	N	Water additive used to control microbes.

Substance	Collection Date	Highest Level Detected	Range of Levels Detected	MCLG	MCL	Units	Violation	Likely Source of Contamination
<b>Disinfection By-Products</b>								
Chlorite	2016	1.5	0.03-1.5	0.8	1	ppm	Y	By-product of drinking water disinfection.
Haloacetic Acids (HAA5)	2016	56	15.1-87.3	No goal for the total	60	ppb	Y	By-product of drinking water disinfection.
Total Trihalomethanes (TTHM)	2016	40	22.8-48.1	No goal for the total	80	ppb	N	By-product of drinking water disinfection.

## Regulated Contaminants

Substance	Collection Date	Highest Level Detected	Range of Levels Detected	MCLG	MCL	Units	Violation	Likely Source of Contamination
<b>Inorganic Contaminants</b>								
Barium	2016	0.0711	0.0711-0.0711	2	2	ppm	N	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Cyanide	2016	<.01	<.01-<.01	200	200	ppb	N	Discharge from plastic and fertilizer factories; Discharge from steel/metal factories.
Fluoride	2016	0.4	0.39-0.39	4	4.0	ppm	N	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate (measured as Nitrogen)	2016	0.23	0.23-0.23	10	10	ppm	N	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
<b>Volatile Organic Contaminants</b>								
Carbon Tetrachloride	2016	<0.5	<0.5-<0.5	0	5	ppb	N	Discharge from chemical plants and other industrial activities.
<b>Radioactive Contaminants</b>								
Combined Radium 226/228	3/22/11	1	1-1	0	5	pCi/L	N	Erosion of natural deposits.
Beta/photon emitters	3/22/11	5.7	5.7-5.7	0	50	pCi/L*	N	Decay of natural and man-made deposits.

\* EPA considers 50 pCi/L to be the level of concern for beta particles.

## Violations Table

<b>Chlorite</b>			
Some infants and young children who drink water containing chlorite in excess of the MCL 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.			
Violation Type	Violation Begin	Violation End	Violation Explanation
MCL, Average (Chlorite)	03/01/2016	03/31/2016	Water samples showed that the amount of this contaminant in our drinking water was above its standard for the period indicated. Because of the contaminant and the sample locations, this posed an acute health risk.
<b>Corrective Actions:</b>	We have increased daily testing for chlorite residuals into multiple tests per day, with a more focused protocol of interpreting the raw water chlorite residuals as a precursor to possible high chlorite levels in the finished water. This, in turn, has enabled us to decrease our dosage of Chlorine Dioxide as a primary disinfectant, and has substantially lowered every chlorite residual since our public notice was circulated in April, 2016. No sample since then has reached half of the maximum contaminant level, and most have been well below the MCL.		
<b>Haloacetic Acids (HAA5)</b>			
Some people who drink water containing haloacetic acids in excess of the MCL, over many years, have an increased risk of getting cancer.			
Violation Type	Violation Begin	Violation End	Violation Explanation
MCL, LRAA	01/01/2016	03/31/2016	Water samples showed that the amount of this contaminant in our drinking water was above its standard (called a maximum contaminant level and abbreviated MCL) for the period indicated.
<b>Corrective Actions:</b>	We have evaluated the methods of water treatment that were previously in place and implemented more efficient, cost-effective, and health conscious treatment techniques. Most notable was the elimination of chloramines that were fed throughout all of the water plant processes that precede filtration. Now, chloramines are only introduced after most of the organics are removed through filtration. This has drastically reduced Haloacetic Acid formation and every sample taken since February, 2016 has been exemplary, with the highest reaching a mere 30.4 ppb, far below the MCL of 60 ppb.		