



SUGAR LAND 2022 WATER QUALITY REPORT



CITY OF SUGAR LAND
Public Works

Main System
PWS 0790005

River Park System
PWS 0790354

Greatwood System
PWS 0790296

New Territory System
PWS 0790253

The City of Sugar Land Public Works Water Utilities Division takes pride in maintaining a tradition of producing superior quality water, vigilantly maintaining water and wastewater infrastructure and providing responsive and efficient customer-oriented service in a cost-effective and innovative manner, emphasizing responsible environmental stewardship and compliance with all regulatory requirements.

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Este reporte incluye informacion importante sobre el agua para tomar.
Para asistencia en español, favor de llamar al telefono **281-275-2450** o **311**.

Director's Message



Each year, the Sugar Land Public Works Department prepares a Water Quality Report to inform you, our customer, of water quality standards, sampling results, and information about the city's 4 drinking water systems. This report represents the commitment and determination of 77 water professionals, as well as city management and council to produce and deliver the safest drinking water to your home and business. As the Director of the Public Works Department, I am pleased to report the water we supply continues to meet all health-based drinking water criteria as well as primary and aesthetic standards and is well below any maximum contaminant level (MCL) set by the U.S. Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ). Our water quality team takes daily samples from many locations throughout the City's four water systems. These samples undergo testing for chemical, bacteriological and other possible contaminants to assure the water we deliver is safe and meets your expectations.

Assuring your drinking water is safe to drink is only one component of what we do. Our team routinely works early in the morning and into the night, helping customers, logging water wells and pumps, and maintaining and repairing our water infrastructure. In addition, staff collects and analyzes data for regulatory reporting and short and long-term infrastructure improvements.

In continuing to invest in the proper care and management of our water resources and infrastructure, Public Works will begin deployment of the Advanced Metering Infrastructure (AMI) project in 2023. AMI is an integrated system of customer water meters, communication networks and data management systems that provide real-time water use information. The ultimate goal of this project is to keep our community safe by maintaining a sustainable and reliable water supply for future generations, and do so in a way that invests in our city infrastructure for our community.

Sugar Land strives to be a trailblazer and enhance the quality of life for our community through a commitment to excellence in the delivery of public utilities. Proactive planning is key to our continued success, ensures we meet the needs of our citizens and helps us create a future better than any of us can imagine.

We are Sugar Land Water and we work for you!

A handwritten signature in black ink, appearing to read "Brain Butscher".

Brain Butscher, P.E.
Director of Public Works

A MESSAGE TO INDIVIDUALS WITH A COMPROMISED IMMUNE SYSTEM FROM THE EPA

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; those 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.**

WHAT IS A WATER QUALITY REPORT?

A Water Quality Report, also known as a Consumer Confidence Report (CCR), is an annual report that presents the water quality of a city's drinking water. Water Quality Reports are required by the EPA and the TCEQ. The report summarizes data collected on drinking water during a calendar year. Water samples are taken daily and tested for chemical, bacteriological and disinfectant residual contaminants. The samples are taken from various locations throughout the water plant's production and distribution system. The report also documents any monitoring or testing violations of drinking water standards set by the EPA and the TCEQ.



SUGAR LAND'S WATER SOURCES

The City of Sugar Land operates four independent potable water systems. The Main System serves the 28,629 metered connections in the city limits east of the Brazos River, and the River Park System serves 1,421 metered connections in the River Park subdivision. Greatwood and New Territory are served by their own systems with 4,633 and 4,797 connections.

The City's Main System is supplied from both groundwater and surface water. Groundwater is supplied from 14 wells at six separate groundwater plants. These wells, with an average depth of greater than 1,200 feet, pump water from the Chicot and Evangeline aquifers. Surface water from the Brazos River through the Oyster Creek canal system supplies roughly 40 percent of the Main System's water demand. Raw surface water is treated at the City's Surface Water Treatment Plant then blended with groundwater at three groundwater plants before entering the distribution lines in the Main System.

The River Park System's two groundwater wells pull water from the Chicot and Evangeline aquifers. The groundwater is treated at the City's River Park groundwater plant and then distributed to customers. Greatwood and New Territory are supplied by water from wells in the Chicot and Evangeline aquifers. Greatwood has four wells and two groundwater plants, and New Territory has three wells and three groundwater plants.

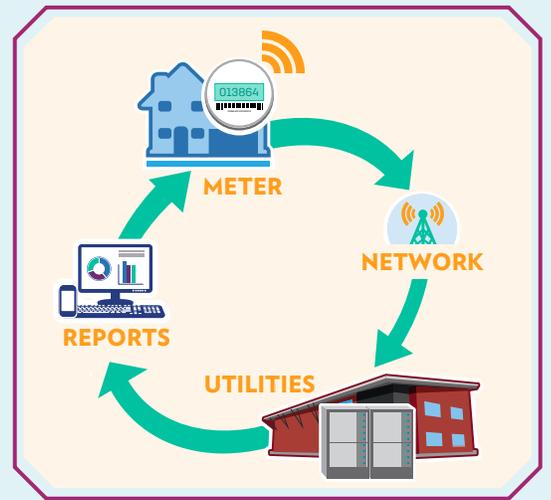
OPPORTUNITIES FOR PUBLIC COMMENT ON WATER PLANNING AND WATER QUALITY

For more information about this report or participating in public meetings concerning the City of Sugar Land's drinking water, call **281-275-2450** or **311**.

ADVANCED METERING INFRASTRUCTURE (AMI) COMING SOON

In January 2023, City Council approved a contract with Aclara Technologies, LLC for the implementation of Advanced Metering Infrastructure (AMI) in Sugar Land. AMI is an integrated system of water meters, communication networks, and data management program that provides real-time water use information to the City and customer. This technology allows meters to be read remotely without having a worker access the meter box. The project will replace and retrofit the City's 40,000 water meters with the AMI metering technology.

In conjunction with AMI implementation, the City will be adding a new online portal that allows customers to view their water usage, analyze data, and connect to city water conservation programs. Customers can also elect to receive water alerts that will notify them if usage indicates a potential leak or abnormal usage.



FREQUENTLY ASKED QUESTIONS

Why is Sugar Land switching to AMI?

- AMI is becoming a standard for utilities around the country and allows for accurate and faster collection of water reads while keeping customers better informed of their water usage.

How long will it take to install the new meter?

- Installation can be expected to take around 30 minutes

Will I be notified before work begins?

- Yes, customers can expect a door hanger in the days leading up to installation. There will also be an interactive map to track progress.

Is AMI secure?

- City of Sugar Land is committed to safeguarding customer privacy. Meters do not transmit customer account numbers, names, or other personal information. Data transmitted from the meter to the data portal is transmitted through a radiofrequency channel that is licensed to the City.

How do I stay informed about AMI?

- General communication will be sent using social media, the City's website, and HOA newsletters. [Sign up](#) to receive regular updates as the AMI project moves forward.

For more information, visit www.SugarLandTX.gov/AMI.

The new AMI and customer portal will provide many benefits, including:

- Provide customers with information and tools they need to make informed choices about their water usage behaviors and patterns
- Alert customers to potential leaks by identifying uncharacteristic water usage
- Improve water meter accuracy and reduce unauthorized water consumption
- Allow the City to remotely monitor and diagnose meter operation issues

Preliminary planning and preparation began in Fall 2023, with a 2 year implementation phase.

DISINFECTING SUGAR LAND'S WATER

The City of Sugar Land takes every precaution to ensure Sugar Land residents have safe, clean drinking water. Disinfectants protect the water against microbial contaminants as it travels through the many miles of pipes and pumps. Chlorine is added to the River Park, Greatwood and New Territory Systems, and chloramine is added to the Main System.



POSSIBLE CONTAMINANTS

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. These constituents are called secondary constituents and are regulated by the State of Texas, not the EPA. Secondary constituents are not cause for health concern, but they may affect the appearance and taste of your water. Drinking water (both tap and bottled water) comes from rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over land or through the ground, it may pick up naturally occurring minerals, substances from animals or humans and even radioactive material.

Contaminants that may be present in drinking 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 might have 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 byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems; and
- radioactive contaminants, which can be naturally occurring or the result of oil and gas production and mining activities.

UPDATES ON THE EPA LEAD AND COPPER RULE

The Environmental Protection Agency's (EPA) Lead and Copper Rule, first implemented in 1991, aims to limit concentrations of lead and copper that enter drinking water, generally through corrosion of water pipes. Exposure to elevated levels of lead can be harmful and can cause serious health problems, especially for pregnant women and young children. The use of lead pipes for installation or maintenance of public and private water systems was banned in 1986. The EPA has recently released updated guidelines for lead and copper monitoring for public drinking water providers throughout the country. The new guidelines, known as Lead and Copper Rule Revisions (LCRR), require water systems to prepare an inventory of service line materials by October 2024.

Lead is rarely found naturally in our source water or in the treated water in our distribution system. Lead in drinking water is primarily from some materials and components associated with service lines and home plumbing. In 1986, Congress enacted the "lead ban," which stated that not only public water systems, but also anyone else who intends to install or repair drinking water plumbing connected to a public water system, must use "lead free materials." As a result, homes built in or after 1988 are far less likely to have lead solder.

Under the new LCRR requirements, the city must identify service lines, including both the city-owned portion and the customer-owned portion, which might contain lead. The service line is the piping that connects the home or business to the water main. The city and the property owner share ownership of the service line. The city owns the portion from the main to the water meter, including the water meter. The property owner is responsible for the portion from the meter to the point it enters the home or business, as well as all the plumbing in the home or building. The City of Sugar Land is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. Currently, there are no known lead service lines in Sugar Land's water systems. The City's Lead Service Line Inventory Program is underway and will be complete by October 2024. The inventory will be made available to the public on the city's website.

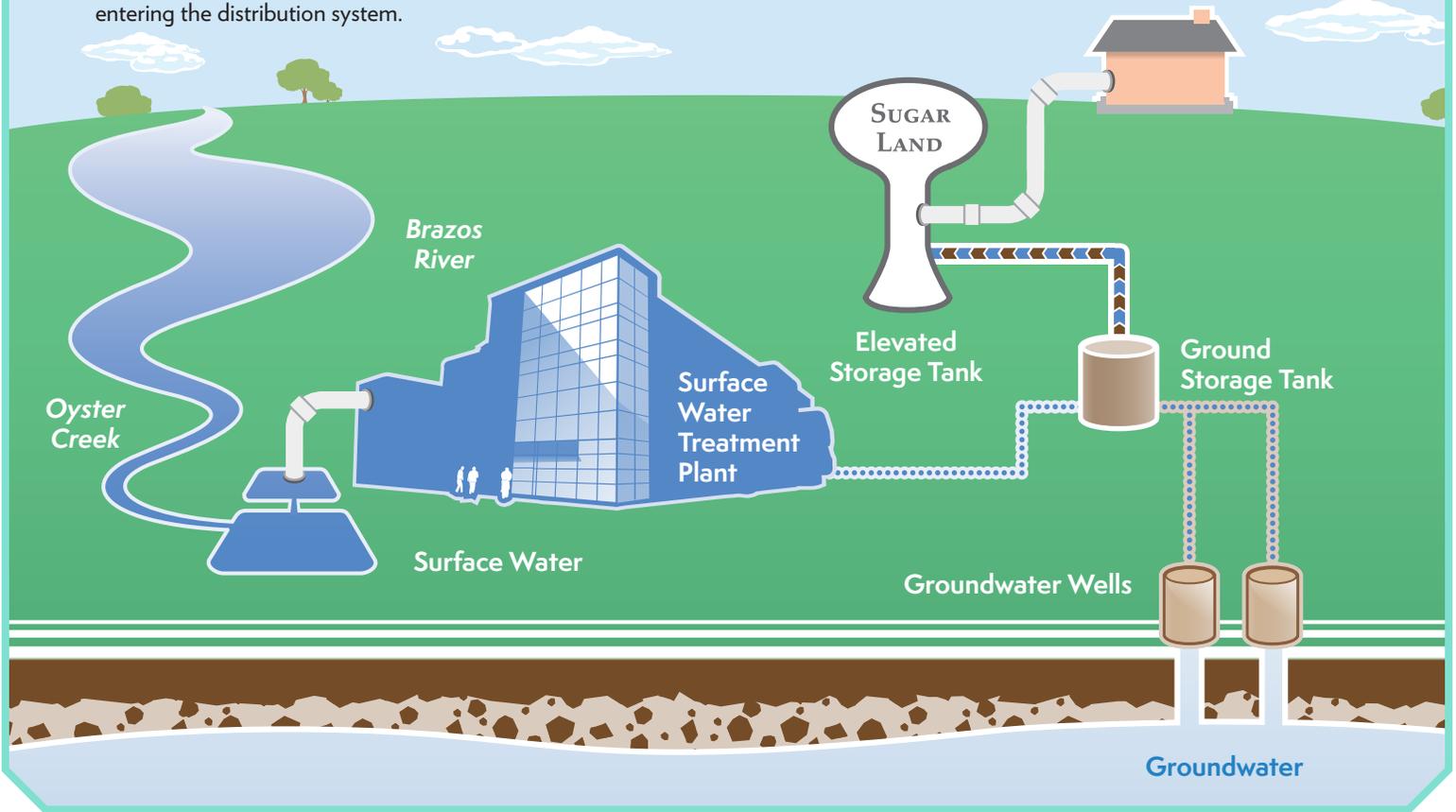
When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your tested. Information on lead in drinking 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>.

You may find information about how Sugar Land is keeping lead out of our customer's water on the city's website at www.SugarLandTX.gov/WaterQuality.



Main System Overview

In the Main System, treated surface water that comes from the Surface Water Treatment Plant is blended with groundwater before entering the distribution system.



CRYPTOSPORIDIUM AND GIARDIA

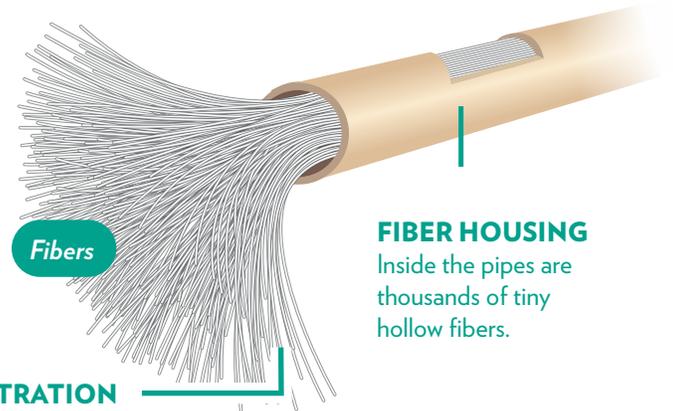
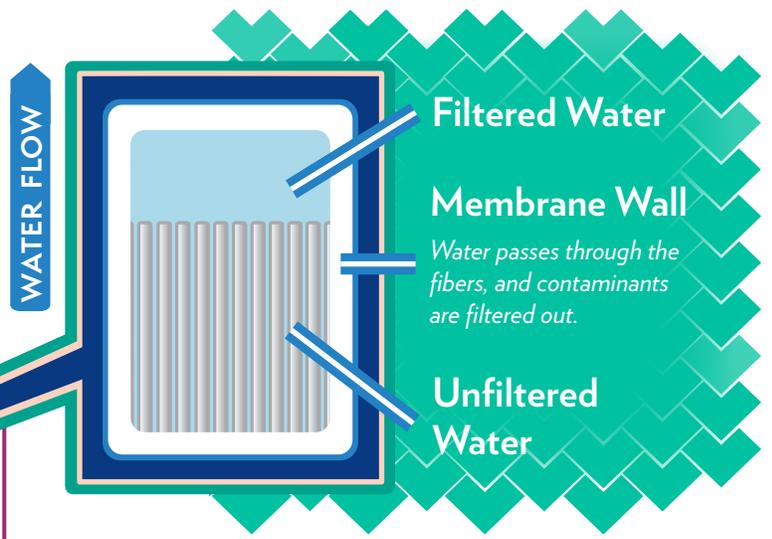
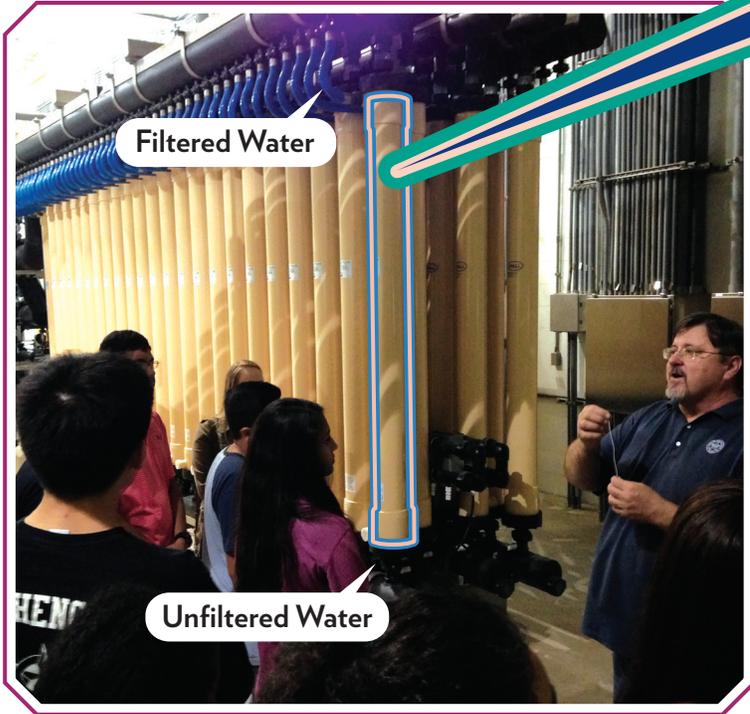
Cryptosporidium and *Giardia* are waterborne, pathogenic organisms. They can be passed into the environment through urban runoff or a sewage leak. Exposure to these organisms can lead to symptoms such as diarrhea, abdominal discomfort, fever, weight loss, malabsorption and anemia. Although not life-threatening to healthy adults, *Cryptosporidium* and *Giardia* can be fatal to infants, the elderly, pregnant women and people with a compromised immune system. (See the message from the EPA on page 1 if you may be at risk.)

PRODUCTION AND DISTRIBUTION PROFILE

Two sources supply the City's Main System: surface water from Oyster Creek and the Brazos River treated at the City's Surface Water Treatment Plant and groundwater wells. The River Park, Greatwood and New Territory systems retrieve water from groundwater wells and treat it in one of the City's groundwater plants. Even though Sugar Land's water is excellent quality, chlorine is added to the River Park, Greatwood and New Territory systems, and chloramine is added to the Main System to protect the finished water against microbial contaminants as it travels through the many miles of pipes and pumps before being delivered to customers. Fluoride is added to the Main and River Park systems to help prevent tooth decay. Corrosion inhibitors may also be added to reduce corrosion of metal components in the private plumbing systems in homes and buildings.

After the water has been treated to meet federal and state standards, the water is delivered to homes and businesses. The City of Sugar Land is committed to providing high quality water. If you have any questions regarding the data in this report, contact the **Public Works Department** at **281-275-2450** or **311**.

Surface Water Filtration Process



FILTRATION

The hollow fibers absorb water, but particles that are larger than 0.1 micron cannot pass through the pores. Bacteria, parasites, sand, silt, clay and other contaminants that are too big to pass through are filtered out.

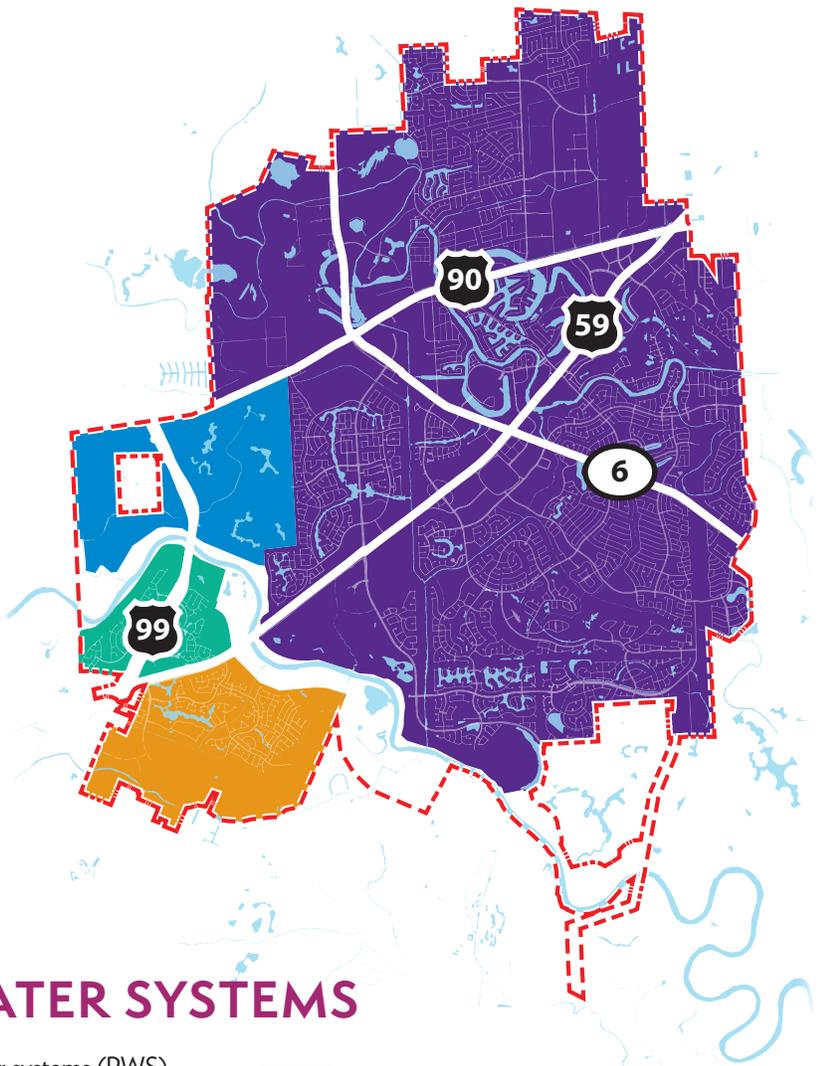
Potable Water Production and Distribution Profile

2022	Main System	River Park System	New Territory System	Greatwood System
Population	81,353	3,626	14,071	11,976
Groundwater Source	Chicot Aquifer and Evangeline Aquifer			
Surface Water Source (Main System)	Brazos River & Oyster Creek			
Annual Demands (billion gallons)	5,814	250	815	781
System Capacity (million gallons / day)	62.5	4.0	11.1	9.2
Daily Average Demands (million gallons)	15.9	0.7	2.2	2.1
Daily Average Demand per Capita (gallons)	195	188	158	178
Number of Groundwater Wells	14	2	3	4
Average Well Depth (feet)	1,250	1,342	1,000	1,600
Well Production Capacity (million gallons / day)	51.6	4.0	11.1	9.2
Surface Water Plant Capacity (million gallons / day)	10.85			
Ground Storage (# of Tanks)	15	2	6	5
Ground storage tank capacity (million gallons)	15.2	0.7	2.3	1.0
Elevated Storage Tanks	5			
Elevated Storage Tank Capacity (million gallons)	6.2			
Miles of Distribution Line	448	21.00	57.20	59.90
Number of Water Meters	28,629	1,421	4,797	4,633

Water Quality Data

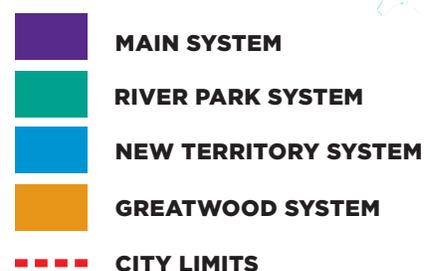
The TCEQ's mission is to protect the public's health and Texas' natural resources. Like the TCEQ, the City's goal is to have clean air and water and to safely dispose of waste. The TCEQ monitors Sugar Land's water by collecting and analyzing water samples for metals, minerals, volatile and semi-volatile organic compounds, disinfectant byproduct compounds and radiological compounds. In addition to the tests that the TCEQ performs, the agency requires that the City of Sugar Land do testing in-house.

In order to ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health. 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** at **800-426-4791**.



SUGAR LAND'S PUBLIC WATER SYSTEMS

The City of Sugar Land operates four independent public water systems (PWS) within the corporate limits of the city. The Main System (PWS 0790005) serves the City east of the Brazos River and the River Park System (PWS 0790354) serves the subdivision west of the Brazos River. Greatwood (PWS 0790296) and New Territory (PWS 0790253) Systems serve the Greatwood & New Territory neighborhoods. The four systems are not connected; therefore, water quality data for each system is presented separately in this report.



DEFINITIONS

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

ACTION LEVEL (AL)

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

AVERAGE LEVEL OF QUARTERLY DATA (AVG)

Regulatory compliance with some Maximum Contaminant Levels are based on running annual average of monthly samples.

CONSTITUENT

Federally regulated or monitored analyte.

INORGANIC CONTAMINANTS

Salts and metals which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

LEVEL 1 ASSESSMENT

A study of the water system to identify potential problems and determine, if possible, why total coliform bacteria were found.

LEVEL 2 ASSESSMENT

A very detailed study of the water system to identify potential problems and determine, if possible, why an Escherichia coli (E. coli) maximum contaminant level (MCL) violation has occurred and/or why total coliform bacteria were found on multiple occasions.

MAXIMUM CONTAMINANT LEVEL (MCL)

The highest permissible level of a contaminant in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MAXIMUM CONTAMINANT LEVEL GOAL (MCLG)

The level of a contaminant in drinking water below which there is no known or expected health risk. MCLGs allow for a margin of safety.

MAXIMUM RESIDUAL DISINFECTANT LEVEL (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 contaminant.

MAXIMUM RESIDUAL DISINFECTANT LEVEL GOAL (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.

MICROBIAL CONTAMINANTS

Viruses and bacteria which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

ORGANIC CHEMICAL CONTAMINANTS

Synthetic and volatile organic chemicals which are by-products of industrial processes and petroleum production; can also come from gas stations, urban storm water runoff and septic systems.

PESTICIDES AND HERBICIDES

These may come from a variety of sources such as agriculture, urban storm water runoff and residential uses.

RADIOACTIVE CONTAMINANTS

Naturally occurring or the result of oil and gas production and mining activities.

TREATMENT TECHNIQUE (TT)

A required process intended to reduce the level of a contaminant in drinking water.

TTHM

Total Trihalomethanes

TURBIDITY

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.



DRINKING WATER TREATMENT: CHLORAMINE AND CHLORINE DISINFECTANTS

The treatment of water to eliminate waterborne diseases is one of the most significant public health advancements of the 20th Century. In the United States, easy access to water is often taken for granted with little thought to the infrastructure, processes, treatment, and people required to deliver drinkable water to convenient faucets located in our homes and throughout our communities. The city of Sugar Land, like other water providers, depends on a century of water science and engineering developments to treat and distribute safe, consumable water to our customers.

Water Distribution systems across the country use various strategies to protect drinking water from water-borne pathogens. The vast majority of systems use either free chlorine or chloramines to help protect the water as it flows through miles of pipe for delivery to customers. As a general rule, free chlorine is used in systems supplied from ground water wells, and chloramines are used in systems supplied from surface water. In Sugar Land, the Greatwood, New Territory, and River Park groundwater systems use free chlorine disinfection. Chloramine is used in the Main system because its source water is a mix of surface water and groundwater.

While chloramine is an excellent disinfectant, prolonged use of chloramine coupled with other factors such as high temperatures, may result in the growth and persistence of non-toxic organic matter within the pipes of the distribution system. Though harmless when consumed by humans, this organic matter can introduce unwanted taste and odor, and hinder the ability to maintain adequate disinfectant levels as water travels through many miles of pipe. Conversion to free chlorine disinfection for 30 days is a best management practice and is supported by the Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ).

In late April 2023, the city converted the Main system from chloramine to chlorine disinfections. During the initial 36-hour period, staff flushed water mains from 215 different fire hydrants and collected more than 1,500 water samples for analysis. Intense flushing combined with extensive water quality monitoring maintains Sugar Land's high standard for water quality during the conversion process. The Main system remained on chlorine disinfection for 30 days, then the process was repeated to return the system back to chloramine disinfection, once again with extensive flushing and sampling to maintain water quality.

Implementing proven water treatment protocols and water quality monitoring in each of the city's four water systems enables the delivery of safe, great tasting water to your tap. Our licensed water treatment experts, trained water distribution and customer service staff, and supporting personnel continue the legacy of water professionals in their commitment to protect and preserve public health through the delivery of safe drinking water. For more information on Sugar Land's water treatment and water quality monitoring, call Public Works at 281-275-2450 or 311.

For questions regarding City of Sugar Land's monitoring,
contact Ashley Kirkpatrick, Water Quality Manager at 281-275-2450 or 311.



IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

The City of Sugar Land’s water systems are participating in gathering data under the EPA’s Fifth Unregulated Contaminant Monitoring Rule (UCMR5). Unregulated contaminants are those that don’t yet have a drinking water standard set by EPA. The purpose of monitoring for these contaminants is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. As our customers, you have a right to know that this data is available. UCMR results and occurrence data can be viewed by the public at <https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule>.

Under UCMR 5, public water systems nationwide will be monitoring for 29 per- and polyfluoroalkyl substances (PFAS) and lithium in drinking water. During 2023, the city will be monitoring for these compounds in the drinking water served by our Main, River Park, Greatwood, and New Territory water systems. Results as of this publication are presented in the tables below. Additional information regarding PFAs and the city’s UCMR5 monitoring can be found at www.SugarLandTX.gov/WaterQuality.

Contaminant	Year	Average Level Detected	Minimum Level Detected	Maximum Level Detected	Unit of Measure
Main System					
Lithium	2023	16.9	0	32.2	ppb
Perfluoropentanoic Acid (PFPeA)	2023	4.3	0	9.9	ppt
Greatwood System					
Lithium	2023	27.2	24.9	29.4	ppb
New Territory System					
Lithium	2023	18.7	15.6	23.4	ppb
River Park System					
Lithium	2023	23.0	23.0	23.0	ppb

For questions regarding City of Sugar Land’s monitoring, contact Ashley Kirkpatrick, Water Quality Manager at 281-275-2450 or 311.



WATER QUALITY DATA TABLES

An important component of water treatment and distribution is compliance with the many state and federal laws and regulations that govern public water systems. The City’s groundwater treatment plants and the SWTP are monitored daily, and monthly reports are submitted to the TCEQ. The data presented in this report is from the most recent testing done in accordance with the regulations. The EPA and the State of Texas require the City of Sugar Land to monitor for certain contaminants less than once per year because the concentrations 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. Unless otherwise noted, the data presented in this report is from testing done in 2022.

ABBREVIATIONS

N/A:	Not Applicable	pCi/L:	pico Curies per Liter; measure of radioactivity
ND:	None Detected	ppm:	parts per million or milligrams per liter (mg/L)
NTU:	Nephelometric Turbidity Units (a measure of turbidity)	ppb:	parts per billion, or micrograms per liter (µg/L)

MAIN SYSTEM - 0790005

Bacteria

Contaminant	Year	MCLG	Total Coliform MCL	Highest # of Total Coliform Positive	Fecal Coliform or E Coli MCL	Total # of Positive E Coli or Fecal Coliform Samples	Violation (Yes/No)	Likely Source of Contamination
Coliform Bacteria	2022	0	TT	1	Routine and repeat samples are total coliform-positive and either is E. coli-positive	0	No	Naturally present in the environment.

Copper and Lead

Contaminant	Date Sampled	MCLG	Action Level (AL)	90th Percentile	# Sites Over AL	Units	Violation (Yes/No)	Likely Source of Contamination
Copper	2020	1.3	1.3	0.1877	0	ppm	No	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems.
Lead	2020	0	15	1.9	0	ppb	No	Corrosion of household plumbing systems; Erosion of natural deposits.

Synthetic Organic Contaminants including Pesticides and Herbicides

Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Atrazine	2022	0.1	0	0.1	3	3	ppb	No	Runoff from herbicide used on row crops.

Radioactive Contaminants

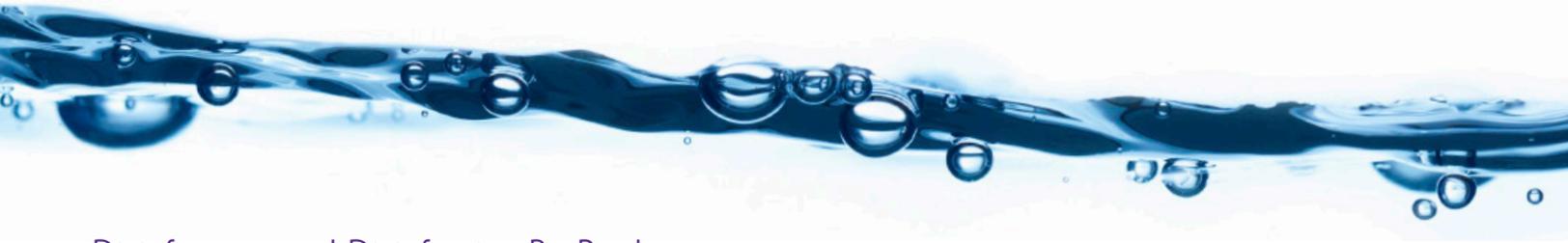
Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Beta/photon emitters*	2022	5.9	5.9	5.9	0	50*	pCi/L	No	Decay of natural and man-made deposits.
Combined Radium 226 /228	2020	1.96	1.96	1.96	0	5	pCi/L	No	Erosion of natural deposits.

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

Total Organic Carbon

Total organic carbon has no adverse health effects. Total organic carbon provides a medium for the formation of disinfection byproducts when water is disinfected. Disinfection is necessary to ensure that water does not have unacceptable levels of pathogens. Byproducts of disinfection include trihalomethanes (THMs) and haloacetic acids (HAAs) which are reported on elsewhere in this report.

Constituent	Average	Minimum	Maximum	MCLG	MCL	Unit of Measure	Likely Source of Contamination
TOC- Source Water	5.2	3.17	7.64	n/a	TT	ppm	Naturally present in the environment.
TOC- Drinking Water	2.99	2.39	4.02	n/a	TT	ppm	Naturally present in the environment.
TOC % Removal	40.9	19.8	63.7	n/a	TT	%	n/a



Disinfectants and Disinfection By-Products

Contaminant	Year	Average Level of Quarterly Data	Lowest Result of a Single Sample	Highest Result of a Single Sample	MRDLG	MRDL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Chloramines (Chlorine Residual, Total)	2022	2.76	0.51	3.98	4	4	ppm	No	Water additive used to control microbes.
Chlorine Dioxide	2022	30	0	370	800	800	ppb	No	Water additive used to control microbes.
Contaminant	Year	Highest Average Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Haloacetic acids (HAA5)	2022	6.9	0.0	6.5	No Goal for the total	60	ppb	No	By-product of drinking water disinfection.
TTHMs (Total trihalomethanes)	2022	4.7	0.0	6.5	No Goal for the total	80	ppb	No	By-product of drinking water disinfection.
Chlorite	2022	0.21	0.0	0.24	0.8	1	ppm	No	By-product of drinking water disinfection.

Inorganic Contaminants

Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Major Sources in Drinking Water
Barium	2022	0.102	0.102	0.102	2	2	ppm	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Fluoride	2022	0.23	0.23	0.23	4	4	ppm	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate (as Nitrogen)	2022	3.27	0	3.27	10	10	ppm	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.

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.	Limit (Treatment Technique)	Level Detected	Violation	Likely Source of Contamination
Highest single measurement	1.0 NTU	0.05	N	Soil runoff
Lowest monthly % meeting limit	0.3 NTU	100%	N	Soil runoff

Secondary Constituents and Other Non-Regulated Contaminants

Contaminant	Year	Average Level Detected	Minimum Level Detected	Maximum Level Detected	Unit of Measure	Secondary MCL
Bromodichloromethane	2022	3.1	0	7.2	ppb	no MCL
Bromoform	2022	3.7	0	8.9	ppb	no MCL
Calcium	2022	48.4	48.4	48.4	ppm	no MCL
Chloride	2022	67	67	67	ppm	250
Chloroform	2022	1.3	0	2.6	ppb	no MCL
Chlorodibromomethane	2022	6.5	0	15	ppb	no MCL
Magnesium	2022	9.7	9.7	9.7	ppm	no MCL
Nickel	2022	2.7	2.7	2.7	ppb	100
pH	2022	8.0	7.4	8.5	units	> 7
Potassium	2022	6.4	6.4	6.4	ppm	no MCL
Sodium	2022	51	51	51	ppm	no MCL
Sulfate	2022	38	38	38	ppm	300
Total Alkalinity	2022	154	154	154	ppm	no MCL
Total Dissolved Solids	2022	344	344	344	ppm	1000
Total Hardness as CaCO ₃	2021	148	101	213	ppm	no MCL

RIVER PARK SYSTEM - 0790354

Water System Interconnect: During 2022, the water system interconnect between Sugar Land's River Park and Greatwood water systems was opened. Water produced in Greatwood supplemented the supply to customers in River Park during planned maintenance in the Water Plants.

Copper and Lead

Contaminant	Date Sampled	MCLG	Action Level (AL)	90th Percentile	# Sites Over AL	Units	Violation (Yes/No)	Likely Source of Contamination
Copper	2021	1.3	1.3	0.124	0	ppm	No	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems.
Lead	2021	0	15	0.973	0	ppb	No	Corrosion of household plumbing systems; Erosion of natural deposits.

Disinfectants and Disinfection By-Products

Contaminant	Year	Average Level of Quarterly Data	Lowest Result of a Single Sample	Highest Result of a Single Sample	MRDLG	MRDL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Chlorine Residual, Free	2022	1.70	0.66	2.30	4	4	ppm	No	Water additive used to control microbes.
TTHMs (Total trihalomethanes)	2022	1.1	1.1	1.1	No Goal for the total	80	ppb	No	By-product of drinking water disinfection.

Inorganic Contaminants

Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Major Sources in Drinking Water
Barium	2022	0.161	0.161	0.161	2	2	ppm	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Fluoride	2020	0.5	0.5	0.5	4	4	ppm	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Selenium	2022	3	3	3	50	50	ppb	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.

Radioactive Contaminants

Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Uranium	2020	1.2	1.2	1.2	0	30	ppb	No	Erosion of natural deposits.
Combined Radium 226/228	2020	1.5	1.5	1.5	0	5	pCi/L	No	Erosion of natural deposits.

Secondary and Non-Regulated Conaminants

Contaminant	Year	Average Level Detected	Minimum Level Detected	Maximum Level Detected	Unit of Measure	Secondary MCL
Bromoform	2021	1	1	1	ppb	no MCL
Calcium	2022	26.8	26.8	26.8	ppm	no MCL
Chloride	2020	42	42	42	ppm	250
Chlorodibromomethane	2021	1	1	1	ppb	no MCL
Iron	2022	38	38	38	ppb	300
Magnesium	2022	5.6	5.6	5.6	ppm	no MCL
Manganese	2022	6.3	6.3	6.3	ppb	50
pH	2022	7.8	7.7	7.8	units	> 7
Potassium	2022	1.6	1.6	1.6	ppm	no MCL
Sodium	2022	74.9	74.9	74.9	ppm	no MCL
Sulfate	2020	10	10	10	ppm	300
Total Alkalinity	2020	188	188	188	ppm	no MCL
Total Dissolved Solids	2020	366	366	366	ppm	1000
Total Hardness as CaCO ₃	2022	90	90	90	ppm	no MCL

NEW TERRITORY SYSTEM - 0790253

Copper and Lead

Contaminant	Date Sampled	MCLG	Action Level (AL)	90th Percentile	# Sites Over AL	Units	Violation (Y/N)	Likely Source of Contamination
Copper	2020	1.3	1.3	0.2426	0	ppm	No	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems.
Lead	2020	0	15	0	0	ppb	No	Corrosion of household plumbing systems; Erosion of natural deposits.

Volatile Organic Contaminants

Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Xylenes	2022	0.0016	0	0.0016	10	10	ppm	No	Discharge from petroleum factories; discharge from chemical factories.

Inorganic Contaminants

Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Major Sources in Drinking Water
Barium	2022	0.106	0.106	0.106	2	2	ppm	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Fluoride	2020	0.59	0.25	0.59	4	4	ppm	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate (as Nitrogen)	2022	0.1	0	0.1	10	10	ppm	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.

Disinfectants and Disinfection By-Products

Contaminant	Year	Average Level of Quarterly Data	Lowest Result of a Single Sample	Highest Result of a Single Sample	MRDLG	MRDL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Chlorine Residual, Free	2022	1.68	1.07	2.26	4	4	ppm	No	Water additive used to control microbes.
Contaminant	Year	Highest Average Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
TTHMs (Total trihalomethanes)	2022	2.2	0.0	4.8	No Goal for the total	80	ppb	No	By-product of drinking water disinfection.

Radioactive Contaminants

Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Beta/photon emitters*	2021	4.5	0	4.5	0	50*	pCi/L	No	Decay of natural and man-made deposits.
Gross Alpha (excluding Radon & Uranium)	2021	4.7	3	4.7	0	15	pCi/L	No	Erosion of natural deposits.
Combined Radium 226 /228	2021	1.5	0	1.5	0	5	pCi/L	No	Erosion of natural deposits.
Uranium	2021	2.8	0	2.8	0	30	ppb	No	Erosion of natural deposits.

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

Secondary Constituents and Other Non-Regulated Contaminants

Contaminant	Year	Average Level Detected	Minimum Level Detected	Maximum Level Detected	Unit of Measure	Secondary MCL
Bromodichloromethane	2022	4.7	0	14	ppb	no MCL
Bromoform	2022	2.3	0	7	ppb	no MCL
Calcium	2022	17.7	17.7	17.7	ppm	no MCL
Chloride	2020	40.1	40	42	ppm	250
Chloroform	2022	0.9	0	2.7	ppb	no MCL
Chlorodibromomethane	2022	5.3	0	16	ppb	no MCL
Iron	2022	74	74	74	ppb	300
Magnesium	2022	4.3	4.3	4.3	ppm	no MCL
Manganese	2022	5.6	5.6	5.6	ppb	50
pH	2022	7.9	7.5	8.3	units	> 7
Potassium	2022	2.3	2.3	2.3	ppm	no MCL
Sodium	2022	86.4	86.4	86.4	ppm	no MCL
Sulfate	2020	15	14	16	ppm	300
Total Alkalinity	2020	187	177	196	ppm	no MCL
Total Dissolved Solids	2020	301	288	308	ppm	1000
Total Hardness as CaCO₃	2022	61.9	61.9	61.9	ppm	no MCL

GREATWOOD SYSTEM - 0790296

Water System Interconnect: During 2022 the water system interconnect between Sugar Land's Greatwood River Park systems was opened. Water produced in River Park supplemented the supply to customers in Greatwood during planned maintenance at two Greatwood Water Plants.

Copper and Lead

Contaminant	Date Sampled	MCLG	Action Level (AL)	90th Percentile	# Sites Over AL	Units	Violation (Yes/No)	Likely Source of Contamination
Copper	2022	1.3	1.3	0.167	0	ppm	No	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems.
Lead	2022	0	15	1.51	0	ppb	No	Corrosion of household plumbing systems; Erosion of natural deposits.

Disinfectants and Disinfection By-Products

Contaminant	Year	Average Level of Quarterly Data	Lowest Result of a Single Sample	Highest Result of a Single Sample	MRDLG	MRDL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Chlorine Residual, Free	2022	1.70	0.82	2.26	4	4	ppm	No	Water additive used to control microbes.
Haloacetic acids (HAA5)	2022	0.6	0.0	1.4	No Goal for the total	60	ppb	No	By-product of drinking water disinfection.
THMs (Total trihalomethanes)	2022	2.8	0.0	4.6	No Goal for the total	80	ppb	No	By-product of drinking water disinfection.

Inorganic Contaminants

Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Major Sources in Drinking Water
Arsenic	2021	4.7	0	4.7	0	10	ppb	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes.
Barium	2021	0.182	0.108	0.182	2	2	ppm	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Fluoride	2022	0.78	0.61	0.78	4	4	ppm	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.

Radioactive Contaminants

Contaminant	Year	Highest Level Detected	Minimum Level Detected	Maximum Level Detected	MCLG	MCL	Unit of Measure	Violation (Yes/No)	Likely Source of Contamination
Gross Alpha (excluding Radon & Uranium)	2022	10	5	10	0	15	pCi/L	No	Erosion of natural deposits.
Combined Radium 226/228	2022	1.69	1.56	1.69	0	5	pCi/L	No	Erosion of natural deposits.
Uranium	2022	6.1	5	6.1	0	30	ppb	No	Erosion of natural deposits.

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

Secondary and Other Non-Regulated Contaminants

Contaminant	Year	Average Level Detected	Minimum Level Detected	Maximum Level Detected	Unit of Measure	Secondary MCL
Bromoform	2022	0.7	0	1.3	ppb	no MCL
Calcium	2021	28.9	12.7	45.1	ppm	no MCL
Chloride	2022	60	56	64	ppm	250
Chlorodibromomethane	2022	0.8	0	1.5	ppb	no MCL
Iron	2021	51.5	16	87	ppb	300
Magnesium	2021	5.8	3.2	8.4	ppm	no MCL
Manganese	2021	5.1	4	6.2	ppb	50
pH	2022	8	7.7	8.3	units	> 7
Potassium	2021	1.9	1.9	1.9	ppm	no MCL
Sodium	2021	107.3	45.6	169	ppm	no MCL
Sulfate	2022	10	9	10	ppm	300
Total Alkalinity	2022	216	211	220	ppm	no MCL
Total Dissolved Solids	2022	345	329	360	ppm	1000
Total Hardness as CaCO₃	2021	95.9	44.8	147	ppm	no MCL



WATER LOSS

Each year the City is required to prepare and submit a water-loss audit to the Texas Water Development Board and report the system's water loss to our customers. A water-loss audit is a tool used by water utilities to assess the volume of water produced compared to the volumes of water sold to customers and used to maintain water quality. Water loss cannot be avoided, as line breaks, undetected leaks and line flushing occur throughout any water delivery system.

“We encourage Sugar Land citizens to contact us when they see a water leak,” said Jason Haney, Public Works field operations manager. “Our customer service team investigates all water leak calls received by the Public Works Department at 281-275-2450 or 311.”

In addition to the percentage of water loss, the City uses the Infrastructure Leakage Index (ILI) as a benchmark of leakage in the Main System. The ILI is a methodology developed by the International Water Association and adopted in 2002 by the American Water Works Association as a performance indicator for systems with more than 3,300 connections. The ILI is the ratio of real (actual) water loss versus unavoidable leakage or unavoidable real losses (UARL).

In 2022, water loss in the Main System was 10.03% of the 5.814 billion gallons produced, which translates to an ILI of 3.11. Water Loss and ILI for Greatwood was 11.7% and 3.84; New Territory experienced a loss of 20.5% and ILI of 6.72. In River Park water loss was 1.0%; because River Park is a smaller system the ILI is not a valid indicator.

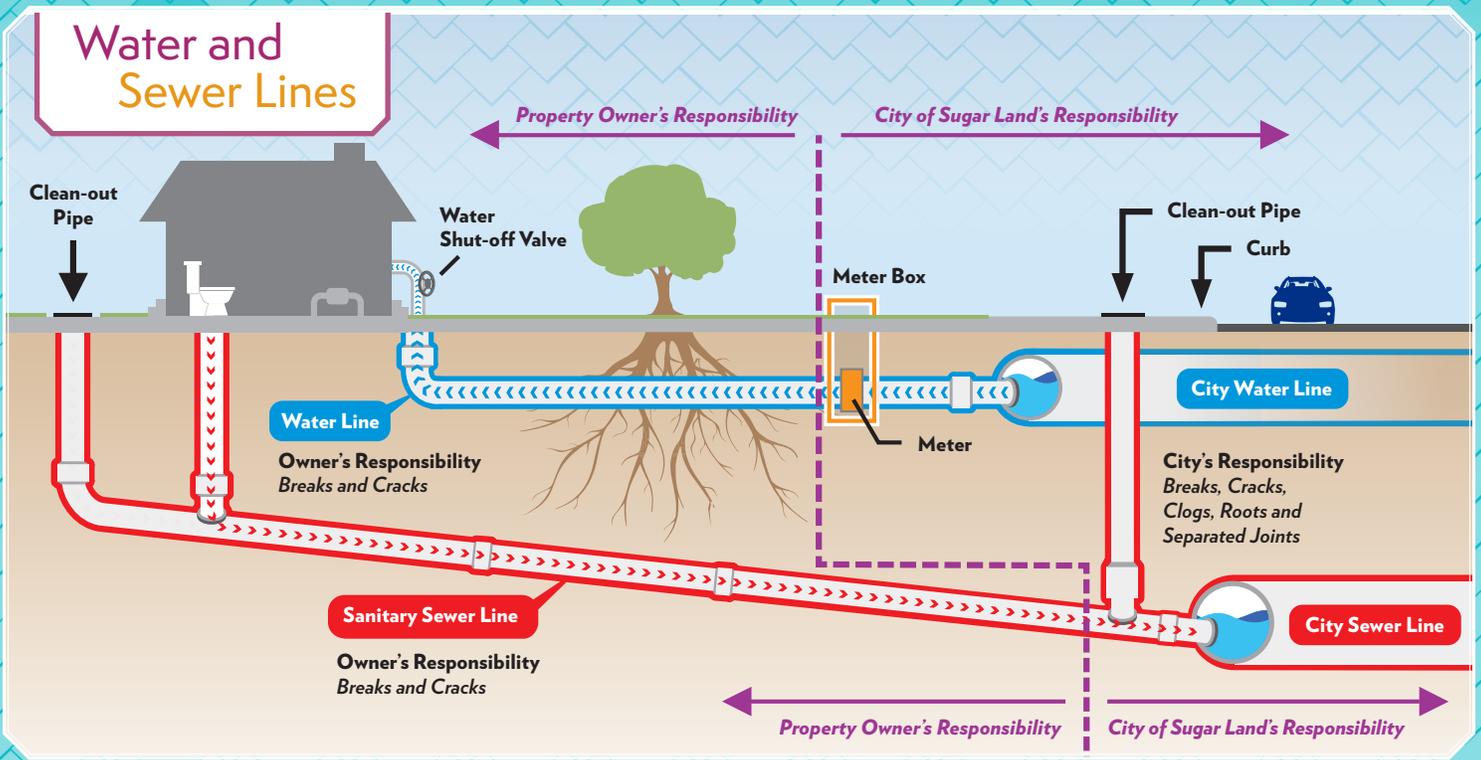
City staff strives to minimize water losses through timely response to all water calls, short time leak repair protocols, routine system maintenance, a robust meter replacement program and documenting water used for system maintenance and water quality.



REPORT WATER LEAKS

If you see a water leak along a roadway or in a yard, please report it to the **Public Works Department**.

CALL 24/7: 281-275-2450 or 311



AVOID SANITARY SEWER BACK-UPS

In addition to leaks in the City's water lines, leaks can occur in clogged sewer lines in homes and businesses. The City repairs stoppages in its collection system. Household clogs may require the resident to hire a plumber. Jason Haney says: "It is always good to call the City first. Hiring a plumber can be costly, and we do not reimburse homeowners for a plumber if the City was not called first."

Sewer lines can become clogged by fat, oil, grease and feminine hygiene products, among other things. To prevent sewer line stoppages, dispose of the following items in the trash, not in the drain, disposal or toilet.

- egg shells
- "flushable" wipes
- diapers
- fruit and vegetable peels
- hygiene products
- oil or grease

If water is flowing down a drain more slowly than usual or water backs up, report the problem to the City's **24-hour customer service line** at **281-275-2450 or 311**. If necessary, a city employee will come to a home or business to investigate the problem and determine whether the clog is in the home's wastewater line or the City's collection pipe.



AVOIDANCE STRATEGIES

- Scrape grease and fatty food scraps into the trash.
- Collect cooking oil in container; then either recycle the oil or place the container in the garbage.
- Never pour sauces down the drain, dispose in the trash.
- Potato, vegetable, and egg shell peels belong in the trash or compost bin.
- Only toilet tissue down the toilet; no "flushable" wipes or personal hygiene products.

COOKING OIL DROP-OFF CENTER

Public Works Service Center • 101-A Gillingham Lane
Monday-Friday, 8 a.m.-5 p.m.

City residents may dispose of up to 10 gallons of liquid cooking oil per day at no charge at the Public Works Service Center. The cooking oil recycling center is for residential customers only and includes only liquid cooking grade fats, oils and grease, and not petroleum products. For more information, call 311.



Public Works • 101-A Gillingham Lane • Sugar Land, TX 77478