

# Protecting your Water System

### TML Regional Workshop May 2025

Marco A. Vega, P.E. General Manager



These are some effects of a failed backflow prevention and cross connection program.

- Water contamination
- A Health Hazard for the public
- Financial Loss for Business

**Owners** 

• Financial Loss for the Local

Government



**City of Laredo Updates the Community on the Efforts Conducted Due to the Boil Water Notice** Post Date: 10/11/2024 6:45 PM Laredo, **Texas** — The City of Laredo's water treatment plant continues to deliver high-quality water throughout its distribution system. The current boil water notice is believed to be caused by an external source possibly a contractor connecting to the system without backflow prevention or a water line break in the affected area. The City's top priority is ensuring public safety.

Source: Dallas Morning News

**Grand Prairie found foaming agent in water supply:** Here's what to know:

Grand Prairie residents north of I-20 warned to not drink city water supply

By Carol Taylor, Matt Kyle, Lana Ferguson and Julia James

Staff Writers Sep. 4, 2024, Updated 3:29 p.m. CDT

Wednesday morning, Grand Prairie Mayor Ron Jensen said the contamination was caused by crews using a foaming agent to extinguish a fire Tuesday in the Great Southwest Industrial District. <u>Backflow caused</u> <u>the contaminant to enter the water</u> <u>supply.</u>



#### Source: The Texas Tribune

"Crisis upon crisis": Industrial pollutants leave San Angelo residents without water as winter storm bears down

In some areas of the West Texas city, the state found concentrations of benzene, a known carcinogen, to be 35 times the safe limit. For other chemicals identified in the water, no concentration is considered safe.

#### BY FRIN DOUGLAS

FEB. 12, 2021UPDATED: FEB. 14, 2021

The cause of the contamination is still under investigation. But, according to city and state officials, the source is likely an industrial company connected to the water system. Water may have flowed into an industrial plant, came into contact with dangerous chemicals there, lost pressure, <u>and flowed</u> <u>back out into the system</u> where it infiltrated nearby homes.



Corpus Christi residents were caught by surprise Wednesday evening when city officials directed them not to shower or drink tap water after a chemical made its way into the city's water supply. The city believes there's anywhere from 3 to 24 gallons of the chemical in the water supply, the Corpus Christi Caller-Times reported.

A <u>release</u> from the city attributed the contamination to <u>"a recent back-flow incident in the</u> <u>industrial district."</u>

DEC. 15, 2016 11 AM CENTRAL

### **Hazard Evaluation :**

Many substances can be introduced into the water system. The degree to which they affect the water system is determined by the degree of hazard when introduced into the water system.

# There are two (2) degrees of hazard :

• Non-Health Hazard

Health Hazard

# Non-Health Hazard

A cross-connection or potential crossconnection involving any substance that generally would not be a health hazard but would <u>constitute a</u> <u>nuisance or be aesthetically</u> <u>objectionable if introduced into the</u> potable water supply.



### **Health Hazard**

A cross-connection, potential contamination hazard, or other situation involving any substance that *can cause death, illness,* spread disease, or has a high probability of causing such effects if introduced into the potable water supply.



# BACKFLOW

is a plumbing term for an **unwanted flow of water in the reverse direction**  The Purpose of a Backflow Prevention Device Is used to protect potable water supplies from contamination or pollution due to backflow

### Backflow occurs for one of two reasons:



# Backflow

A backflow can occur when a substance flows back into the public water system as water pressure fluctuates due to a water line break or hydrant usage.

Backflow prevention devices prohibit dangerous contaminants from being drawn into the water system by restricting the flow of water to only one direction.

NORMAL FLOW

TOXIC

### Back Pressure

Back pressure occurs when water or liquids are pushed back into the potable water system due to an increase in water pressure.

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### Back Siphonage

Back-siphonage is where contaminated water and liquids are sucked into a potable water system.





Flow reverses *due to decrease or loss of supply line pressure* 

# **Reverse Flow**

A drop in water pressure due to a break in the water main causes water to flow in reverse.





Notice Backflow Preventer Test Report Due by 7/17/24

April 17, 2024

John Doe 1234 Street Ave. McAllen, Texas 78504

Dear Customer:

Our records indicate that the following backflow assembly(ies) at your property are due for testing:

Service Address: 1234 Street Ave. McAllen

Type	Serial Number	Test Due Date
FEBCO PVB 01.00 765-1	H265550	7/17/2024

State and local regulations require that the assemblies be tested to safeguard the public water supply from contamination.<sup>1</sup> Testing is required at least once annually, and must be performed by individuals licensed by the Texas Commission on Environmental Quality (TCEQ). For your convenience, a list of licensed testers recognized by McAllen Public Utility is enclosed.

A completed testing report must be submitted within 90 days of this notice. Once the test is completed, please submit the original TCEQ Backflow Prevention Assembly Test and Maintenance Report to:

McAllen Public Utility P.O. Box 220 McAllen, TX 78504 Alternatively, you may email the report to MPUbackflow@mcallen.net.

Please note that failure to comply will result with McAllen Public Utility sending a sub-contractor to perform the required Backflow Prevention Assembly Test(s) within five (5) days. Any repairs, maintenance, modifications, device replacements or any additional services required will be your responsibility. Fees for testing will be billed through the regular utility billing process. In addition, an administrative fee of \$25.00 will be added. If the installation(s) are deemed unsafe and a threat to the City of McAllen Public Water System, it will lead to interruption of your water service.2

Thank you for your cooperation. If you have any questions about the testing requirements, or need additional information, you may contact us at (956) 681-1665. Sincerely,

MPU Backflow Division

#### 1<sup>st</sup> Notice To Customer (90 day)

- TEST DUE DATE •
- SUBMIT TEST REPORT WITHIN 90 • **DAYS** OF THIS NOTICE
- A LIST OF LICENSED TESTERS ٠ INCLUDED
- **DISPATCH SUB-CONTRACTOR** ٠ WITHIN 5 DAYS OF NON-COMPLIANCE
- FEES FOR TESTING WILL BE BILLED • THROUGH THE UTILITY BILL
- IF DEVICE IS FOUND NON-• COMPLIANT, THEIR SERVICES WILL **BE INTERRUPTED**

<sup>&</sup>lt;sup>1</sup> Referenced Regulations:

TCEQ Rules and Regulations: <u>https://www.tceq.texas.gov/drinkingwater/cross-connection</u>
 MPU's policy: <u>https://www.mcallenoublicutility.com/water-systems</u> (*see Backflow tab*)
 City of McAllen Code Ordinance: <u>https://library.municode.com/bt/mcallen/codes/code\_of\_ordinances (see</u> Part II, Chapter 22, Article IV, Sec. 22-136)

<sup>&</sup>lt;sup>2</sup> Standard disconnection procedures will apply, including any associated disconnection and reconnection fees.



Second Notice Backflow Preventer Test Report Due by 7/17/24

May 17, 2024

John Doe 1234 Street Ave. McAllen, TX, 78504

Dear Customer:

Our records indicate that the following backflow assembly(ies) at your property are due for testing:

Service Address: 1234 Street Ave., McAllen, Texas

Type S	erial Number	Test Due Date
FEBCO PVB 01.00 765-1	H265550	7/17/2024

State and local regulations require that the assemblies be tested to safeguard the public water supply from contamination.<sup>1</sup> Testing is required at least once annually, and must be performed by individuals licensed by the Texas Commission on Environmental Quality (TCEQ). For your convenience, a list of licensed testers recognized by McAllen Public Utility is enclosed.

A completed testing report must be submitted within 60 days of this notice. Once the test is completed, please submit the original TCEQ Backflow Prevention Assembly Test and Maintenance Report to:

> McAllen Public Utility P.O. Box 220 McAllen, TX 78504

Alternatively, you may email the report to MPUbackflow@mcallen.net.

Please note that failure to comply will result with McAllen Public Utility sending a sub-contractor to perform the required Backflow Prevention Assembly Test(s) within five (5) days. Any repairs, maintenance, modifications, device replacements or any additional services required will be your responsibility. Fees for testing will be billed through the regular utility billing process. In addition, an administrative fee of \$25.00 will be added. If the installation(s) are deemed unsafe and a threat to the City of McAllen Public Water System, it will lead to interruption of your water service.2

Thank you for your cooperation. If you have any questions about the testing requirements, or need additional information, you may contact us at (956) 681-1665.

Sincerely, MPU Backflow Division

- <sup>1</sup> Referenced Regulations:

- TCEQ Rules and Regulations: https://www.tceo.texas.gov/drinkingwater/cross-connection
   MPU's policy: https://www.mcallenpublicutility.com/water-systems (see Backflow tab)
   City of McAllen Code Ordinance: https://library.municode.com/tx/mcallen/codes/code\_of\_ordinances (see
  Part II, Chapter 22, Article IV, Sec. 22-136)

#### 2<sup>nd</sup> Notice To Customer (60 Day)

**TEST DUE DATE** .

•

- SUBMIT TEST REPORT WITHIN 60 DAYS OF THIS NOTICE
- A LIST OF LICENSED TESTERS INCLUDED
- **DISPATCH A SUB-CONTRACTOR** • WITHIN 5 DAYS OF NON-COMPLIANCE
  - FEES FOR TESTING WILL BE BILLED THROUGH THE UTILITY BILL
- IF DEVICE IS FOUND NON-COMPLIANT, • THEIR SERVICES WILL BE INTERRUPTED

<sup>&</sup>lt;sup>2</sup> Standard disconnection procedures will apply, including any associated disconnection and reconnection fees.



#### FINAL NOTICE Backflow Preventer Test Report Due by 7/17/24

June 17, 2024

John Doe 1234 Street Ave. McAllen, Texas 78504

Dear Customer:

This letter serves as a final notice regarding the required testing of the backflow prevention assembly(ies) located at your property, listed below. Testing is mandated by state and local regulations to safeguard the public water supply from contamination.1

Service Address: 1234 Street Ave., McAllen, Texas

Type	Serial Number	Test Due Date
FEBCO PVB 01.00 765-1	H265550	7/17/2024

Testing must be performed by individuals licensed by the Texas Commission on Environmental Quality (TCEQ). For your convenience, a list of licensed testers recognized by McAllen Public Utility is enclosed.

We urge you to submit a completed testing report within 30 days of this notice. Once the test is completed, please submit the original TCEQ Backflow Prevention Assembly Test and Maintenance Report to:

> McAllen Public Utility P.O. Box 220 McAllen, TX 78504

Alternatively, you may email the report to MPUbackflow@mcallen.net.

Please note that failure to comply will result with McAllen Public Utility sending a sub-contractor to perform the required Backflow Prevention Assembly Test(s) within five (5) days. Any repairs, maintenance, modifications, device replacements or any additional services required will be your responsibility. Fees for testing will be billed through the regular utility billing process. In addition, an administrative fee of \$25.00 will be added. If the installation(s) are deemed unsafe and a threat to the City of McAllen Public Water System, it will lead to interruption of your water service.2

Thank you for your prompt attention to this important matter. If you have any questions about the testing requirements, or need additional information, you may contact us at (956) 681-1665. Sincerely,

MPU Backflow Division

<sup>1</sup> Referenced Regulations:

- •
- TCEQ Rules and Regulations: <u>https://www.tceq.texas.gov/drinkingwater/cross-connection</u> MPU's policy: <u>https://www.mcallenpublicutility.com/water-systems</u> (*see Backflow tab*) City of McAllen Code Ordinance: <u>https://library.municode.com/tx/mcallen/codes/code</u> of ordinances (*see* Part II, Chapter 22, Article IV, Sec. 22-136)

<sup>2</sup> Standard disconnection procedures will apply, including any associated disconnection and reconnection fees.

#### **Final Notice To Customer** (30 day)

- TEST DUE DATE •
- LETTER SERVES AS FINAL NOTICE •
- SUBMIT TEST REPORT WITHIN 30 • DAYS OF THIS NOTICE
- A LIST OF LICENSED TESTERS • INCLUDED
- **DISPATCH A SUB-CONTRACTOR** • WITHIN 5 DAYS OF NON-COMPLIANCE
- FEES FOR TESTING WILL BE BILLED ٠ THROUGH THE UTILITY BILL
- IF DEVICE IS DEEMED NON-• COMPLIANT, THEIR SERVICES WILL BE INTERRUPTED

Does the City of McAllen Have a Backflow Preventer Tester Sub-Contractor?

YES!

#### • SUB-CONTRACTOR NAME:

- Valley Garden Center INC. DBA SOUTHERN LANDSCAPES, McAllen TX
- TERM OF CONTRACT: 4 YEARS
- CONTRACT EXPIRES: SEPTEMBER 2026

# QUESTION S



### **Examples of Non-Health Hazard**



- HEATING EQUIPMENT (COMMERCIAL & DOMESTIC)
- IRRIGATION SYSTEMS <u>WITHOUT</u> CHEMICAL
   ADDITIVES
- KITCHEN EQUIPMENT (COMMERCIAL)
- SWIMMING POOLS ( PRIVATE PVB OR AG & PUBLIC

RPZ OR AG)

### **Examples of Health Hazard**

- COMMERCIAL CAR WASH FACILITIES
- PLATING OR CHEMICAL PLANTS

- FOOD AND BEVERAGE PROCESSING PLANTS
- IRRIGATION SYSTEMS <u>WITH</u> CHEMICAL ADDITIVES

### Types of Backflow Devices

- Air Gap(AG) (Physical Separation between potable water and non-potable water)
- Hose Bibb Vacuum Breaker
- Atmospheric Vacuum Breaker(AVB)
- Pressure Vacuum Breaker(PVB)
- Double Check Detector Assembly(DCDA)
- Reduced Pressure Principal Detector Assembly(also know as the RPZ)

### Air Gap (AG)

#### Will protect against:

- Non-Health Hazard
- Health Hazard
- Backsiphonage
- Backpressue
- Most Common Use:
- Restaurants



### Hose Bibb Vacuum Breaker

### Will protect against:

- Non-Health Hazard
- Health Hazard
- Backsiphonage

#### Most Common Use:

On Exterior Faucets





### Atmospheric Vacuum Breaker (AVB)

### Will protect against:

- Non-Health Hazard
- Health Hazard
- Backsiphonage

#### Most Common Use:

Landscape Irrigation





### Pressure Vacuum Breaker (PVB)

### Will protect against:

- Non-Health Hazard
- Health Hazard
- Backsiphonage

#### Most Common Use:

Landscape Irrigation





### Double Check Detector Assembly (DCDA)

### Will protect against:

- Non-Health Hazard
- Backpressure
- Backsiphonage



#### Most Common Use:

Fire Suppression System (When no chemicals are in the fire suppression system)



### Reduced Pressure Principal Detector Assembly (RPZ)

#### Will protect against:

- Non-Health Hazard
- Health Hazard
- Backpressure
- Backsiphonage

#### Most Common Use:

Fire Suppression System (When chemical additives are put into the fire suppression system)



# Federal, State, & Local Regulations



- Environmental Protection Agency (EPA)
- Texas Commission on Environmental Quality

(TCEQ)

City of McAllen Local Ordinance (Plumbing Code)







In the US, the Environmental

Protection Agency (EPA) holds

local water suppliers

responsible for maintaining a

certain amount of purity in

potable water systems.

#### **Rules and Regulations for Public Water Systems RG-195**

#### 290.44 (h) Backflow, siphonage.

- 290.44(h) (1) No water connection from any public drinking water supply system shall be allowed to any residence or establishment where an actual or potential contamination hazard exists unless the public water facilities are protected from contamination.
- 290.44(h) (1) (B) (i) An adequate internal cross-connection control program shall include an annual inspection and testing by a licensed backflow prevention assembly tester on all backflow prevention assemblies used for health hazard protection.
- 290.44(h) (1) (B) (iii) It will be the responsibility of the water purveyor to ensure that these requirements are met.





#### **ARTICLE IV. - PLUMBING CODE[6]**

Footnotes:--- (6) ----

Cross reference— Substantial evidence rule in effect in appeals from decisions or orders of city officers or employees, § 2-196; utilities, Ch. 106; water, § 106-51 et seq.; sanitary sewer system, § 106-141 et seq.

State Law reference— Requirement that cities prescribe rules and regulations relating to plumbing, Vernon's Ann. Civ. St. art. 6243-101, § 15.

Sec. 22-136. - Plumbing code adopted.

#### There is hereby adopted for and by the city, the International Plumbing Code, 2018 edition,

including appendices, prepared by the International Code Council, published in booklet form, (with the exception that section 312.3 is hereby amended to allow the use of an air pressure test on plastic piping when in the discretion of the building official inclement weather would interfere in the effectiveness of a water test,) which is referred to, incorporated in this article, and made a part of this article for all purposes. A copy of such code shall be filed in the office of the building inspector.

(Code 1966, § 24-12; Ord. No. 1992-80, § XVII, 10-12-92; Ord. No. 1995-13, § III, 3-13-95; Ord. No. 1999-72, § 3, 8-9-99; Ord. No. 2001-86, § 3, 12 10-01; Ord. No. 2009-07, § III, 1-26-09; Ord. No. 2012-86, § I, 11-26-12; Ord. No. 2020-42, § I(Exh. A), 8-24-20)

### **Rules and Regulations for Public Water Systems RG-195**

#### • 290.44 (h) Backflow, siphonage.

- 290.44(h) (1) No water connection from any public drinking water supply system shall be allowed to any residence or establishment where an actual or potential contamination hazard exists unless the public water facilities are protected from contamination.
- 290.44(h) (1) (A) At any residence or establishment where an actual or potential contamination hazard exists, additional protection shall be required at the meter in the form of an air gap or backflow prevention assembly. The type of backflow prevention assembly required shall be determined by the specific potential hazard identified in §290.47(f) of this title (relating to Appendices).
- 290.44(h) (1) (B) At any residence or establishment where an actual or potential contamination hazard exists and an adequate internal cross-connection control program is in effect, backflow protection at the water service entrance or meter is not required.
- 290.44(h) (1) (B) (i) An adequate internal cross-connection control program shall include an annual inspection and testing by a licensed backflow prevention assembly tester on all backflow prevention assemblies used for health hazard protection.
- 290.44(h) (1) (B) (ii) Copies of all such inspection and test reports must be obtained and kept on file by the water purveyor.
- <u>290.44(h) (1) (B) (iii) It will be the responsibility of the water purveyor to ensure that these requirements are met.</u>



### Rules and Regulations for Public Water Systems RG-195 (cont....)

- (2) No water connection from any public drinking water supply system shall be connected to any condensing, cooling, or industrial process or any other system of nonpotable
  usage over which the public water supply system officials do not have sanitary control, unless the said connection is made in accordance with the requirements of paragraph
  (1) of this subsection. Water from such systems cannot be returned to the potable water supply.
- (3) Overhead bulk water dispensing stations must be provided with an air gap between the filling outlet hose and the receiving tank to protect against back siphonage and cross-contamination.
- (4) All backflow prevention assemblies that are required according to this section and associated table located in §290.47(f) of this title shall be tested upon installation by a
  licensed backflow prevention assembly tester and certified to be operating within specifications. Backflow prevention assemblies which are installed to provide protection
  against health hazards must also be tested and certified to be operating within specifications at least annually by a licensed backflow prevention assembly tester.
- (A) Backflow prevention assembly testers shall have completed an executive director-approved course on cross-connection control and backflow prevention assembly testing, pass an examination administered by the executive director, and hold a current license as a backflow prevention assembly tester.
- (i) Backflow prevention assembly testers are qualified to test and repair assemblies on any domestic, commercial, industrial, or irrigation service.
- (ii) Backflow prevention assembly testers may test and repair assemblies on firelines only if they are permanently employed by an Approved Fireline Contractor. The Texas Department of Insurance's State Fire Marshal's Office requires that any person performing maintenance on firelines must be employed by an Approved Fireline Contractor.
- (B) Gauges used in the testing of backflow prevention assemblies shall be tested for accuracy annually in accordance with the University of Southern California's Manual of Cross-Connection Control or the AWWA's Recommended Practice for Backflow Prevention and Cross-Connection Control (AWWA Manual M14). Public water systems shall require testers to include test gauge serial numbers on the Backflow Prevention Assembly Test and Maintenance Report (commission Form 20700), and ensure testers have gauges tested for accuracy.
- (C) A test report must be completed by the recognized backflow prevention assembly tester for each assembly tested. The signed and dated original must be submitted to the public water supplier for recordkeeping purposes. Any form which varies from the format specified in commission Form 20700 must be approved by the executive director prior to being placed in use.
- (5) <u>The use of a backflow prevention assembly at the service connection shall be considered as additional backflow protection and shall not negate the use of backflow protection on internal hazards as outlined and enforced by local plumbing codes.</u>

### Water Conservation and Drought Contingency Plan

A Texas Water Development Board (TWDB) Water Conservation Specialist conducted a review of McAllen Public Utility's 2023 Water Conservation and Drought Contingency Plan (Plan). Feedback was provided regarding necessary updates to meet TWDB requirements. These updates are important, as having an approved Plan is a prerequisite for MPU's TWDB loan application for the Desalination Facility.Below is a summary of the changes made in response to TWDB's recommendations:

- Addition of an Appendix: Included MPU rates, maps, TWDB reports, educational flyers, and other relevant content as required by TWDB.
- Utility Profile Section: Revised sections to include current figures in the form of tables for population, population and water use projections and water loss. Added the Annual TWDB Utility Profile Reports to the Appendix
- Water Conservation Goals Clarified the baseline data as required by TWDB, added tables outlining goals and baseline figures, and included a schedule for implementation, tracking methods, and steps to achieve targets.
- Conservation Projects: Expanded details and timeline of our current water conservation projects: AMI (TWDB Funded Project) and Desalination Facility (prosed TWDB funding). TWDB requested additional details about other infrastructure improvement projects and their potential conservation benefits.

- Metering- Expanded information on the AMI meter change out project and production meters at the plants.
- Water Audit and Leak Survey: Took out the water audit survey results per TWDB. Changed section header to "Measures to Determine and Control for Water Loss" and added MPU efforts to address and minimize water loss.
- Terminology Adjustment- Updated terminology to comply with TWDB preferences by replacing "unaccounted for water" with "water loss" throughout the document.
- Leak Detection and Repair- Added TWDB-requested projections on leaks, including the number of leaks repaired, total real loss, and the length of main lines. Updated information on MPU's procures to repair leaks.
- Clarified Industrial User Charges: Revised language to clearly define charges for industrial users during Stages 3–5 of the Plan.
- General Updates Improved grammar, writing style, and formatting for consistency and accuracy. Adjusted content to align with TWDB reporting. Made changes so that the information presented matches what is submitted in TWDB reports.
- New Coverpage
- Addition of an Acronyms list