TCEQ REGULATORY GUIDANCE

Water Supply Division
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Customer Service Inspections: A Guide for Public Water Systems

Introduction

Before continuous water service is established for a new construction, Texas law requires an inspection of the private water-distribution system, to help ensure that the water is safe to drink. This type of "customer service inspection" is required in Title 30 of the Texas Administrative Code (TAC), Subsection 290.46(j).

All the rules in 30 TAC 290, Subchapter D, are administered by the Texas Commission on Environmental Quality (TCEQ). These rules are contained in the TCEQ publication *Rules and Regulations for Public Water Systems*, RG-195.

Who should read this guide?

This guide is intended for those who work in a public water system, or PWS, in Texas. The PWS could be, for example, a water district, a water supply corporation, or a city- or investor-owned system. In this guide, "you" refers to the PWS and its staff members. The term "public water supplier" is also used to mean "public water system."

Members of the general public—customers of such water systems—will also find answers in this guide to many questions that they may have about customer service inspections.

Please note also that this publication is for general guidance only and does not take the place of the rules and regulations governing customer service inspections.

1. About Customer Service Inspections

What is the purpose of a customer service inspection?

The purpose of a customer service inspection is to identify the presence of potential sources of contamination or illegal lead plumbing materials.

What is identified in a customer service inspection?

Inspectors certify that there are no cross-connections, which are actual or potential connections between a potable and a non-potable water supply, and no lead in the pipes and solder. Here are three examples of cross-connections:

- Direct or indirect connections.
- Connections that allow water that is used for condensing, cooling, or industrial processes to flow back to the public water system. In this context, an "industrial process" is defined as any use other than domestic consumption.
- Potential contamination hazards.

Here are two examples of prohibited lead plumbing materials:

- For plumbing that was installed on or after July 1, 1988, and prior to Jan. 4, 2014, pipe or pipe fitting that contains more than 8.0% lead.
- For plumbing that was installed on or after Jan. 4, 2014, pipes or pipe fittings that contain more than 0.25% lead or solders and flux that contain more than 0.2% lead. (See section 4, "Standards for Lead in Pipes and Solder.")

When are customer service inspections required?

An inspection *must* occur in the following four situations:

- When there is new construction.
- When there is plumbing work that requires a permit and involves a major modification (i.e., a material improvement, correction, or addition) to the private water distribution system. The "private water system" refers to the facilities on the owner's side of the meter.
- When certain household modifications are being made that do not require a permit but that nevertheless require a customer service inspection. Examples of these kinds of modifications include the remodeling or expansion of plumbing or water-using devices, a customer request for the installation of a larger meter, the drilling of a private well, or the installation of a rainwater harvesting system.
- When the water supplier believes that a cross-connection or other potential contamination hazard exists. In such a case, the water supplier must provide written justification to the customer for requiring an inspection by specifically identifying the threat that is believed to exist.

An inspection is generally not required for mobile and manufactured homes and recreational vehicles, but please see the exceptions to this general rule in section 3, "Inspections of RVs and Mobile Homes."

How many customer service inspections are required?

Under Texas law—30 TAC 290.46(j)—a customer service inspection is required for each connection before continuous water service can be provided.

If a water supplier requires an additional inspection beyond this, such an inspection must be authorized by the water supplier's governing body—for example, its board of directors. This authorization should be recorded in an official register, such as a local government code or a tariff.

Who can perform a customer service inspection?

Customer service inspections may be performed only by the following licensed professionals:

- Plumbing inspectors and water supply protection specialists licensed by the Texas State Board of Plumbing Examiners (TSBPE) (see "Where to Find More Information," at the end of this guide).
- Customer service inspectors licensed by the TCEQ.

To search for licensed customer service inspectors in your area on the TCEQ's website, go to <www.tceq.texas.gov/goto/lic_reg_search>. For help with your search, or for more information, call the TCEQ's Operator Certification Section, 512-239-6133.

After an inspection, the customer gets a copy of the customer service inspection certificate; the original must be kept by the water system for 10 years.

What are the public water supplier's options for providing customer service inspections?

The water supplier has three main options for providing customer service inspections:

- Provide a list of certified inspectors to the customer, who then selects and hires an inspector.
- Provide qualified employees to perform the inspections.
- Hire independent, qualified contractors to perform the inspections.

Can the PWS refuse an inspection certification from someone the customer selected?

In some cases, the PWS may refuse an inspection certification from someone the customer selected. In part, it depends on the nature of the PWS in question, as follows:

- Investor-owned utility: No.
- Water supply corporation: Yes, if the corporation passes bylaws addressing who can perform inspections.
- Water district or city-owned system: Yes, if the district or city passes rules or ordinances addressing who can perform inspections.

2. Controlling Cross-Connections and Backflows

What are cross-connections and backflows?

A "cross-connection" is the point at which a contaminated substance comes in contact with the drinking water system. In checking for such cross-connections, the customer service inspector will also determine if there is a need for a "backflow prevention assembly."

The term "backflow" refers to any unwanted flow of used or non-potable water or substance from a domestic, industrial, or institutional piping system into the water distribution system. One of the ways to prevent backflow from occurring at the point of a cross-connection is to install a backflow prevention assembly.

What are the potential contamination hazards from cross-connections?

Some potential threat to a drinking-water supply include:

- chemical plants that use a water process
- hospitals
- mortuaries
- medical, dental, and veterinary clinics
- laboratories

- marinas
- connections with an auxiliary water supply, which could be polluted

Who can test and repair backflow prevention assemblies in Texas?

Only backflow prevention assembly testers who have been licensed by the TCEQ are authorized to test and repair assemblies on any domestic, commercial, industrial, or irrigation service in Texas. For information on these licensees, please contact the TCEQ's Occupational Licensing Section, 512-239-6133, or visit its webpage, at <www.tceq.texas.gov/licensing>.

Should a backflow prevention assembly be installed if no known hazard exists?

No, there is no need to install a backflow prevention assembly as additional protection if no hazard has been identified. Chapter 290 rules do not require backflow prevention assemblies at all connections.

The TCEQ does not recommend the installation of single-check or dual-check valves at *every* service connection. These devices are not testable, create a closed system, and do not meet the TCEQ's requirements for premises isolation.

What is a closed system? What is thermal expansion?

A "closed system" is created when an approved backflow prevention assembly or a check valve (which is not approved for backflow prevention) is installed at a customer's service connection. The backflow prevention assembly or check valve does not allow water to flow backward from the customer's private water system into the PWS's distribution system.

"Thermal expansion" is a result of heating. When water is heated, its density decreases, and its volume expands. Backflow prevention assemblies and other one-way valves installed at a customer's service connection eliminate a path for expanded water to flow back to the distribution system, resulting in increased system pressure. This increase in pressure can result in pressure surges; dripping faucets; chronic or continuous dripping of temperature and pressure-relief valves on hot-water heating tanks; and other mechanical problems with hot-water heating tanks, including distortion and rupture.

A PWS that requires the installation of a backflow prevention assembly at a customer's service connection should take the following steps to ensure that the customer is protected from the potential problems associated with thermal expansion:

- Immediately notify the customer that a closed system has been created (or notify a new customer that their service connection is a closed system) and provide the customer with information explaining the potential problems associated with thermal expansion.

- In areas where a plumbing code has been adopted, provide information to the customer regarding plumbing-code requirements for closed systems. Requirements may include installation of a pressure-relief valve.
- In areas where a plumbing code has not been adopted, provide information to the customer regarding thermal expansion tanks and pressure-relief devices that can be installed to mitigate the potential problems associated with thermal expansion.

What is the difference between premises isolation and internal protection?

"Premises isolation," also referred to as "containment," uses a minimum of backflow assemblies to separate the customer from the water main. This strategy prevents the customer from contaminating or polluting the water supply.

"Internal protection" places backflow devices on all cross-connection hazards located within the customer's residence or facility. In this way, the water supply and other customers are protected from possible contamination.

In some instances, the use of both premises isolation and internal protection may be the best way to protect from internal hazards, as well as hazards from other customers. Regardless of whether the PWS requires premises isolation or internal protection (or both), the customer service inspection must include an internal inspection of the residence or facility to determine whether premises isolation is necessary.

When are backflow prevention devices, such as hose bibb vacuum breakers, required?

State-approved plumbing codes, as well as most local plumbing ordinances, *require* "hose bibb vacuum breakers" on exterior faucets of new dwellings. These devices are *recommended* for existing dwellings.

However, if a cross-connection is found at an existing dwelling, an "air-gap separation" or a backflow prevention device, such as a hose bibb vacuum breaker, is *required*. The type of device will be determined by the degree of hazard posed by the cross-connection.

3. Inspections of RVs and Mobile Homes

How can a water supplier protect against backflow at a recreational vehicle (RV) park?

When owners of recreational vehicles flush and clean the waste from the plumbing system of their RVs, a potential threat to the potable water supply may be created. Many RVs are sold today with a "sewer flusher" connection, which allows the blackwater tank to be flushed.

Most RVs have two types of waste holding tanks: The "blackwater tank" holds the waste from the toilet. The "graywater tank" holds the waste from the kitchen sink, the wash basin, and the bath tub or shower.

According to manufacturers of devices used to flush blackwater tanks, these devices address the problem of solids build-up. However, the device also allows for the direct connection between the blackwater tank and the public water supply, and 30 TAC 290.46(k) *prohibits* the connection of a public water supply to a sewer pipe. Although most of these devices come with some form of backflow protection, since the blackwater tank of an RV holds the same materials as a sewer pipe, any device that allows connection between the public water supply and blackwater tanks is a threat to the potable water distribution systems of the RV park and the public water supplier.

Public water suppliers should:

- Perform periodic inspections of the RV parks that are within their service area.
- Educate managers of RV parks about blackwater-tank flushing devices.
- Encourage managers of RV parks to inspect every RV that enters their park, especially when the RV owner is connecting the RV to the RV park's potable water distribution system. Managers should prohibit the use of "Y Hose Adapters," which enable an RV owner to establish a simultaneous connection from a potable water hose bibb to both the RV's potable water system and its sewer flusher device.
- At a minimum, require premises isolation at the master meter through the installation of a reduced-pressure-principle backflow prevention assembly at every RV park.

For those public water systems that include numerous RV parks in their service area, it may be necessary to adopt specific language or requirements in a backflow prevention ordinance that addresses the unique hazards that may be found at RV parks.

What are the requirements for customer service inspections at mobile-home parks?

Water suppliers are *not* required to conduct a customer service inspection for a mobile home entering a mobile-home park *unless* a cross-connection or potential contamination hazard is suspected. This standard also applies to mobile homes placed on an individual lot.

However, manufactured homes are required to comply with proper plumbing standards, under the National Manufactured Housing Construction and Safety Standards Act, as enforced by the federal Department of Housing and Urban Development. These standards, which became effective on June 15, 1976, prohibit lead and cross-connections within the home.

How can a water supplier protect against backflow at a mobile-home park?

The public water supplier may protect by either premises isolation or internal protection, although premises isolation at the master meter may be the most practical method of protection (see "What is the difference between premises isolation and internal protection?" in section 2, above).

4. Standards for Lead in Pipes and Solder

The inspection must determine whether the plumbing in question has an unacceptable amount of lead in the pipes and solder. This determination is made using the following standards for unacceptability:

- In private water distribution facilities that were installed on or after July 1, 1988, and prior to Jan. 4, 2014, pipes or pipe fittings that contain more than 8.0% lead.
- Pipes and pipe fittings that contain more than 0.25% lead or solders and flux that contain more than 0.2% lead, in the following two circumstances:
  - The installation or repair of any public water supply.
  - The installation or repair of any plumbing in a residential or nonresidential facility providing water for human consumption and connected to a public drinking water supply system.
  - *Note:* This requirement will be waived for lead joints that are necessary for repairs to cast-iron pipe.

The following two categories, however, are exempt from prohibitions on the use of lead pipes, solder, and flux:

- Pipes, pipe fittings, plumbing fittings, or fixtures (including backflow preventers) that are used exclusively for non-potable services such as manufacturing, industrial processing, irrigation, or outdoor watering.
- Toilets, bidets, urinals, fill valves, flush-o-meter valves, tub fillers, shower valves, service saddles, fire hydrants, or water distribution main gate valves that are 2 inches in diameter or larger.

What about homes built after July 1, 1988, that do not meet lead plumbing standards?

A public water supplier *must not connect* a home built *after* July 1, 1988, that does not meet the lead plumbing standards listed above. Excessive amounts of lead must be removed before continuous water service can be provided to a home built after July 1, 1988.

What about homes built before July 1, 1988, that do not meet lead plumbing standards?

A public water supplier is allowed to connect a home built *before* July 1, 1988, that does not meet lead plumbing standards.

How many tests for lead solder must be performed on new establishments?

Only one test is required for new establishments to ensure that the solder is no more than 0.2% lead. If a field test indicates the presence of lead, a sample of the solder may be collected and submitted to a commercial laboratory for quantification. If a laboratory confirms the presence of excessive amounts of lead in the solder, permanent water service should be denied at that location. The TCEQ and the TSBPE should be notified of the incident, and their recommendations regarding proper steps to address the issue should be followed.

5. What PWS Rules and Tariffs Should Include

All public water systems should maintain a set of rules, regulations, tariffs, or service agreements to explain what services are provided, including customer service inspections.

Should customer service inspections be covered in PWS rules and tariffs?

Yes. Your rules, regulations, tariffs, or service agreements should, at a minimum, cover the following three topics:

- cross-connections
- lead plumbing and materials
- enforcement

Who pays for the customer service inspection, and who sets the fee?

If a PWS requires an inspection by its own employees, or if it provides this service as part of its business, the PWS may either:

- Charge a fee established by the PWS and approved by its governing body—or established by the TCEQ, in the case of an investor-owned utility (IOU).

OR

- Provide the service at no cost and then recoup the expenses through rates.

If a PWS requires the customer to provide the inspection certification, the customer must take the following two actions:

- Select a qualified professional to conduct the inspection.
- Pay the professional for the service.

Can an IOU charge an inspection fee if it is not in their approved tariff?

No. Neither an investor-owned utility nor its employees can charge for an inspection if the charge is not in their approved tariff.

Do TCEQ rules require a PWS to adopt a plumbing code?

No. TCEQ rules do not require a PWS to adopt a plumbing code. However, TCEQ rules do require a PWS to adopt an adequate plumbing ordinance, regulations, or service agreement with provisions for proper enforcement to ensure that neither cross-connections nor other unacceptable plumbing practices are permitted.

6. Enforcing Cross-Connection Controls

How does a PWS enforce proper plumbing practices on cross-connection control?

A public water system has two options for enforcing proper plumbing practices to control cross-connections:

- Adopt rules, tariffs, or service agreements that meet the minimum standards in the state-approved plumbing codes (the International Plumbing Code or the Uniform Plumbing Code; see "Where to Find More Information," below).

OR

- Cite sections of the state-approved plumbing codes that address cross-connection control in your plumbing ordinance, regulations, or service agreement.

When can a water supplier deny service to a customer?

To find out when a water supplier can deny service to a customer, you need to know if the customer is establishing new service, or if the customer has an existing account (see section 1 for related questions about when customer service inspections are required).

In the case of new customers, the water supplier may withhold permanent service until the inspection is completed.

In the case of existing customers, there are two circumstances that would trigger denial of service:

- *A suspected (but not verified) cross-connection*—the water supplier may terminate with notice if a customer refuses inspection.
- *A known cross-connection or contamination of the public water supply*—the water supplier has a duty to immediately terminate service. Notice is preferable, but not always possible.

Questions Your Customers May Ask

Where should a customer appeal a PWS ruling?

Customers should appeal rulings or enforcement actions to the water supplier's governing body, which differs according to ownership.

- If it's a city-owned system, the customer should appeal to the city council.
- If it's a district water system or a water supply corporation, the customer should appeal to the board of directors.
- If the system is an investor-owned utility, the customer should appeal to the Public Utility Commission by calling 888-782-8477 or visiting its website, at <www.puc.texas.gov>.

Where should a customer report improper plumbing practices?

Customers should report improper plumbing practices or inspections by a licensed plumber to the Texas State Board of Plumbing Examiners (TSBPE) at 800-845-6584.

Where to Find More Information

To contact the TCEQ

By phone:

Water Supply Division: 512-239-4691

Occupational Licensing Section: 512-239-6133

Publications: 512-239-0028

By mail:

Water Supply Division, MC 155
TCEQ
P.O. Box 13087
Austin, TX 78711-3087

On the web:

<www.tceq.texas.gov/drinkingwater>

For *Rules and Regulations for Public Water Systems* (TCEQ publication RG-195), go to <www.tceq.texas.gov/goto/rg195>.

For information about the TCEQ's cross-connection control program, go to <www.tceq.texas.gov/goto/ccc>.

To contact the TSBPE

By phone: 800-845-6584

On the web: <tsbpe.texas.gov>

To purchase a copy of a state-approved plumbing code

International Plumbing Code
International Code Council Store
11711 W. 85th St.
Lenexa, KS 66214
800-786-4452
<www.iccsafe.org>

Uniform Plumbing Code
IAPMO Publications Dept.
4755 E. Philadelphia St.
Ontario, CA 91761
909-472-4100
<www.iapmo.org>

Other sources of information about cross-connection control

American Society of Sanitary Engineering
ASSE International Office
18927 Hickory Creek Drive, Suite 220
Mokena, IL 60448
708-995-3019

American Water Works Association
AWWA Headquarters
6666 W. Quincy Ave.
Denver, CO 80235-3098
800-926-7337

Foundation for Cross-Connection Control and Hydraulic Research
University of Southern California
Research Annex 219
Los Angeles, CA 90089-7700
866-545-6340

Information about lead

Please visit the TCEQ Lead and Copper Program webpage at <www.tceq.texas.gov/goto/lead-copper>.

Texas Commission on Environmental Quality

Customer Service Inspection Certificate

Name of PWS:	
PWS ID #:	
Location of Service:	

Reason for Inspection:	
New construction	☐
Existing service where contaminant hazards are suspected	☐
Material improvement, correction or expansion of distribution facilities	☐

I _____, upon inspection of the private water distribution facilities connected to the aforementioned public water supply do hereby certify that, to the best of my knowledge

Compliance	Non-Compliance		
☐	☐	(1)	No direct or indirect connection between the public drinking water supply and a potential source of contamination exists. Potential sources of contamination are isolated from the public water system by an air gap or an appropriate backflow prevention assembly in accordance with Commission regulations.
☐	☐	(2)	No cross-connection between the public drinking water supply and a private water system exists. Where an actual air gap is not maintained between the public water supply and a private water supply, an approved reduced pressure principle backflow prevention assembly is properly installed.
☐	☐	(3)	No connection exists which would allow the return of water used for condensing, cooling or industrial processes back to the public water supply.
☐	☐	(4)	No pipe or pipe fitting which contains more than 8.0% lead exists in private water distribution facilities installed on or after July 1, 1988 and prior to January 4, 2014.
☐	☐	(5)	Plumbing installed on or after January 4, 2014 bears the expected labeling indicating $\leq$0.25% lead content. If not properly labeled, please provide written comment.
☐	☐	(6)	No solder or flux which contains more than 0.2% lead exists in private water distribution facilities installed on or after July 1, 1988.

I further certify that the following materials were used in the installation of the private water distribution facilities:

Service lines:	Lead ☐	Copper ☐	PVC ☐	Other ☐
Solder:	Lead ☐	Lead Free ☐	Solvent Weld ☐	Other ☐

Remarks:	

I recognize that this document shall be retained by the aforementioned Public Water System for a minimum of ten years and that I am legally responsible for the validity of the information I have provided.

Signature of Inspector:		License Type:	
Inspector Name(Print/Type):		License Number:	
Title of Inspector:		Date / Time of Insp.:	/

A Customer Service Inspection Certificate should be on file for each connection in a public water system to document compliance with 30 TAC § 290.44(h)/290.46(j).