

How Cross Connection and Backflow Can Lead to Contaminated Water

It really happened in Texas:

- While mixing a batch of pesticide, a worker pushed a garden hose into the tank until it touched the bottom.
- Nearby, city utility workers opened a flush valve, releasing a large flow of water from a water main.
- Where the worker was mixing the pesticide, the water pressure dropped, and the flow in the hose reversed. Water and pesticides flowed from the pesticide tank back through the hose and into the water lines of the residence.

Luckily, this is where it stopped: The worker mixing the pesticide realized the danger and alerted the utility workers, who closed the flush valve before the contamination reached the city's distribution line. Still, good water and time were wasted:

- To remove the pesticide from the water lines of the customer, utility workers flushed those lines.
- In case the water main had been contaminated, the utility workers had to flush the city's distribution line, too.
- Until testing showed authorities that the city's water was safe, they warned customers in the area not to drink it.

As shown by the [case histories of backflow incidents](#) maintained by the backflow-prevention education program of the University of Florida's TREEO Center, not all cases of cross connection and backflow end so smoothly.

Your Role as a Water Customer

By taking steps to control cross connections and prevent the possibility of backflow at your home, you will help to protect the public water supply and ensure that your family continues to enjoy safe drinking water. Garden hoses and irrigation systems are common concerns, but there are other common residential sources of cross connections, too.

Garden Hoses and Backflow

The garden hose is the most common cross connection. Each of these common uses of a garden hose sets up a cross connection:

- forcing it into a clogged gutter, downspout, or sewer pipe to flush out the clog

- connecting it directly to a hose-end sprayer to apply pesticide or fertilizer to your yard
- connecting it to a soap-and-brush attachment to wash your car, boat, or siding
- letting the end of the hose lie in a puddle or pool of water on the ground

No doubt you can think of other examples. In each of these cases, if backflow happens, your household's water lines could be contaminated. Depending on how long the backflow event lasts, the contamination could spread to the public drinking water system.

Fortunately, there are two inexpensive ways to solve this problem:

- Make sure that the end of your garden hose is never submerged in or connected to a nonpotable substance. This solution is free, but not highly reliable. Can you always be this careful?
- Install a **hose bibb vacuum breaker** on each of your outside faucets. These inexpensive devices are designed to allow water to flow in only one direction. You can find them at most home supply stores and through plumbing suppliers. Before you use a hose-end sprayer, you should first install a hose bibb vacuum breaker at the faucet.

Irrigation Systems and Backflow

As a homeowner, you may install and maintain your own irrigation system, but it's still important to have a suitable backflow prevention assembly (BPA) in place and to be sure that it works properly. Here are a few ways you can do just that:

- Hire a licensed irrigator. You can find one from our [online licensing database](#).
- If you install your own system, have a licensed BPA tester confirm that the BPA is installed and operating properly. Licensed BPA testers are also listed in our [online licensing database](#).
- TCEQ requires you to have a licensed BPA tester check the BPA when it is installed on your irrigation system. Your water provider may have adopted additional codes or regulations which require **an annual test** of the BPA on your irrigation system.

Lago Vista Water System

USER DROUGHT CONTINGENCY PLAN (UDCP)

PWS 0940029

Introduction

Lago Vista Water System has developed this User Drought Contingency Plan (UDCP) to enable it to manage its water systems and water resources during drought conditions, periods of abnormally high usage, system contamination, and extended reduction in ability to supply water due to equipment failure or other emergencies in a conscientious, fair, and appropriate manner. It is not designed to punish, stigmatize, or criticize anyone about their usage of water. Its sole intent is to maintain an adequate supply of water during the various stages of drought conditions or other water supply emergencies, which may occur from time to time and to enable Lago Vista Water System to comply with the requirements of a court, government agency, ground water district, wholesale provider or other authority.

Lago Vista Water System believes that significant reductions in water usage can be achieved through voluntary efforts by customers. Implementation of voluntary water conservation measures and conscientious water use practices are encouraged at all times, however, additional water use restrictions are required in cases of extreme drought, periods of abnormally high usage, system contamination, or extended reduction in ability to supply water due to equipment failure.

SECTION 1 Declaration of Policy, Purpose, and Intent

Lago Vista Water System, in its continuing effort to maintain an adequate supply of high quality water, has prepared this User Drought Contingency Plan (UDCP). In order to maintain supply, storage, and pressure or to comply with regulatory requirements, temporary restrictions may be necessary to limit non-essential water usage. This UDCP has been guided by TCEQ Requirements & Rules.

SECTION 2 Public Education

Lago Vista Water System will periodically provide customers with information about the Plan, including information about the conditions under which each stage of the Plan is to be initiated or terminated and the water use restrictions to be implemented in each stage. Drought plan information will be provided by:

- utility bill inserts; or,
- other direct mail notices will be provided if necessary to provide timely information.

SECTION 3 Notice Requirements

Written notice will be provided to each customer by mail or hand delivery prior to implementation or termination of each stage of the water restriction program. Notice will be mailed to each customer at least 72 hours prior to the start of new or modified water use restrictions. If notice is hand delivered, Lago Vista Water System will not enforce the provisions of the plan for 24 hours after notice is provided. The written notice to customers will contain the following information:

1. the date restrictions will begin,
2. the circumstances that triggered the restrictions,
3. the stages of response and explanation of the restrictions to be implemented, and,
4. an explanation of the consequences for violations.

The notice when it is necessary to move to Stage III will inform customers that violating the restrictions on sprinklers, automatic irrigations systems or use of hand held hoses may result in installation of a flow restrictor without a prior separate written notice.

SECTION 4 Violations of Mandatory Restrictions: Stage I, Stage II or Stage III

1. First violation:

Stage I or Stage II - The customer will be notified by written notice, hanging tag or letter, of their specific violation of required restrictions, reductions or for excessive usage. The customer will be provided a copy of the User Drought Contingency Plan.

Stage III - Lago Vista Water System may install a flow restricting device as described below without a prior written notice for violation of restrictions on sprinklers, automatic irrigation systems or use of hoses.

2. Subsequent violations:

- a. After the first written notice, Lago Vista Water System may install a flow-restricting device in the line to limit the amount of water that will pass through the meter in a 24-hour period. The flow restrictor may be left in the line for up to 60 days or until the wholesale provider or district requirements are ended. Lago Vista Water System may charge the customer for the actual cost of installing and removing the flow-restricting device, not to exceed \$50.00 for installation and \$50.00 for removal. The customer will be provided a copy of the User Drought Contingency Plan.
- b. If the customer violates the required reductions after installation of a flow restrictor, Lago Vista Water System may discontinue service at the meter for up to 7 days. The customer will be charged a \$50 reconnect fee for restoration of service. Further violations will result in disconnection and additional reconnect fees. When service is reconnected a flow restrictor may be installed.
- c. If a customer violates the restrictions again after having a flow restrictor installed and removed, Lago Vista Water System may either reinstall a flow restrictor as described in (a) above or, at its option, disconnect service for up to 7 days. When service is reconnected a flow restrictor may be installed.

SECTION 5 Exemptions or Variances

Lago Vista Water System may grant any customer an exemption or variance from the UDCP for good cause **upon written request**. A customer who is refused an exemption or variance by Lago Vista Water System may appeal the denial in writing to the TCEQ. Lago Vista Water System will treat all customers equally concerning exemptions and variances, and will not discriminate in granting exemptions and variances. No exemption or variance will be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

SECTION 6 Response Stages

Unless there is an immediate and extreme reduction in an aquifer level; water availability or production; critical system capacity; or other absolute necessity to declare an emergency or severe condition, Lago Vista Water System will progress sequentially from Stage 1 through more restrictive stages. If, after a reasonable period of time, demand is not reduced enough to alleviate the conditions that initiated restrictions or to comply with restrictions required by a court, district, government agency, wholesale provider or other authority, some outdoor water use provisions in a particular Stage may be modified or further restricted or more restrictive Stages implemented as necessary to achieve the necessary reductions. In addition to restricted watering times, maximum monthly or weekly customer usage targets may be implemented and enforced in the same manner as the restrictions listed below. Notice of any modified restrictions or of a more stringent stage will be provided to customers in accordance with Section 3. **In order to comply with the requirements of an underground district, wholesale provider or other authority, Lago Vista Water System may skip a less restrictive stage and immediately implement Stage II or Stage III.**

STAGE I – MANDATORY WATER RESTRICTIONS – See Chart on Page 5

STAGE II – MANDATORY WATER RESTRICTIONS – See Chart on Page 5

STAGE III – MANDATORY WATER RESTRICTIONS - CRITICAL STAGE – See Chart on Page 5

SECTION 7 Drought, Demand & Critical System Capacity Stage Triggers

Water System Supply Contamination or Outage: In the event of system supply contamination or system outage, Lago Vista Water System may immediately implement the response measures of **Stage III**.

Demand Based Triggers:

<u>Trigger</u>	<u>Stage I Mandatory</u>	<u>Stage II Mandatory</u>	<u>Stage III Mandatory</u>
Percent of water treatment capacity reached for 3 or more days in a week	75 %	85 %	95 %
Total daily demand as % of pumping capacity for 3 or more days in a week	75 %	85 %	95 %
Storage capacity	Storage Tank Level drops within 4 ft. of low level lock out 3 or more days in a week.	Storage does not refill prior to 6 pm or tank drops within 3 ft. of low level lock out 3 or more days in a week.	Low level lock out is reached more than once in a week.
Well Pump Runs ___ hours per day more than 3 days per week	16 hrs	20 hrs	22 hrs

Supply Based Triggers - Where Lago Vista Water System pumps water from a ground water district, the district will formally notify Lago Vista Water System of one or more precipitating events triggering a stage of the district’s drought contingency plan. Upon enactment of a stage in the district’s drought contingency plan, Lago Vista Water System may correspondingly implement the same or equivalent stage in its service area. Lago Vista Water System can modify its plan to match the watering schedules, daily watering hours or other specific restrictions of a district if asked to do so. Lago Vista Water System will notify customers of any changes in days, hours or other provisions prior to enforcing provisions of the plan. When Lago Vista Water System must self regulate to comply with ground water permit limitations, water restrictions may be enacted to ensure compliance with permit limits.

SECTION 8 Non Drought Related Conservation Awareness

Lago Vista Water System will voluntarily perform the following actions during late Spring and Summer as an integral part of the UDCP when there is no declared drought or other water supply emergencies:

- Lago Vista Water System will operate it system under normal conditions.
- Lago Vista Water System will insure that each operator has received a copy of the UDCP.
- Lago Vista Water System will encourage customers to follow water conservation practices at all times.
- Lago Vista Water System will urge customers to water lawns on the conservation awareness schedule, avoid unnecessary and excessive watering and to keep evaporative losses to a minimum.
- Lago Vista Water System will seek to identify and repair leaks in a timely fashion. Customers will be encouraged to notify Lago Vista Water System of any known or observed leaks.

SECTION 9 Water Conservation Awareness Period – Stage I Voluntary Restrictions

Goal – 5 % Reduction in usage

Lago Vista Water System will encourage customers to follow the voluntarily conservation awareness practices below between May and September when not already in a declared drought or mandatory water restriction period. Customers will be notified in writing each spring that Voluntary Restrictions are in place and encouraged to follow water conservation practices.

Voluntary Practices to Reduce Water Consumption

- Follow the suggested twice weekly schedule for lawn watering with hose end sprinklers or automatic irrigation systems and water between the following times:

Midnight & 4 a.m.; 7:00 a.m.-10 a.m. & 8 p.m. to Midnight on the designated watering day.

- Water garden, trees, flowers or other landscaped areas with hand held hose, a faucet filled bucket or watering can any day between 6:00 pm – 10:00 am, but avoid unattended hoses.
- Soaker Hoses – Anywhere except lawns 8 p.m. – 10:00 a.m. any day
- Car washing with bucket or hand-held hose with automatic shut-off.
- Draw less water for bath or reduce shower time.
- Do not let water run while shaving, dish washing, brushing teeth, etc.
- Keep pools covered if not used on a daily basis.
- Use water displacement device in toilet tank.
- Install aerators on faucets.
- Utilize water reuse where possible.
- Replacement or retrofits with ultra low flow fixtures is encouraged.
- Do not use hose to wash off driveways, sidewalks, or streets. Use a broom or blower.
- Use Commercial Car Washes that Recycle Water.

TWICE WEEKLY WATERING SCHEDULE
(Applicable During Conservation Awareness or Stages I, II or III)

House No. Ends In 2 or 9	House No. Ends In 1 or 5	House No. Ends In 6 or 7	House No. Ends In 0 or 3	House No. Ends In 4 or 8
Monday Thursday	Tuesday Friday	Wednesday Saturday	Thursday Sunday	Friday Monday

SECTION 10 MANDATORY WATER RESTRICTIONS

Stage I – Mandatory Restrictions	Stage II – Mandatory Restrictions	Stage III– Mandatory Restrictions Critical Stage
Goal - 10 % Reduction	Goal - 20 % Reduction	Goal - 40 % Reduction
<p>If the triggers identified in the UDCP are met or critical system capacities are being threatened, Lago Vista Water System will activate Stage I. Comply with TWICE WEEKLY lawn watering schedule: DESIGNATED DAYS & HOURS ONLY</p>	<p>Whenever production or critical system capacity triggers are reached, Lago Vista Water System will activate Stage II measures of its UDCP. Comply with TWICE WEEKLY lawn watering schedule: DESIGNATED DAYS & HOURS ONLY</p>	<p>Whenever system failures are imminent or there are outages, Lago Vista Water System activate the Stage III measures of its UDCP. TWICE WEEKLY SCHEDULE DESIGNATED DAYS & HOURS ONLY</p>
<p>Actions required of Customers</p> <ul style="list-style-type: none"> Continued water conservation practices and voluntary reductions in water use in general. Mandatory compliance with “Required Reductions” listed below. <p>Actions initiated by Lago Vista Water System</p> <ul style="list-style-type: none"> Flushing is limited to dead end mains and then only to maintain water quality. Check for and promptly fix leaks. <p>Required Customer Restrictions</p> <ul style="list-style-type: none"> Automatic Irrigation Systems WATERING SCHEDULES Midnight to 4:00 a.m. 7:00 a.m.-10 a.m. & 8:00 p.m. to Midnight Hose End Sprinkler– <u>Same as above</u> Hand Held Hose, faucet filled bucket or watering can - Watering landscaped areas allowed <u>ANY DAY at designated hours.</u> Please avoid unattended hoses. Midnight to 10:00 a.m. 7:00 p.m. to Midnight Soaker Hoses – Landscaped areas, <u>ANY DAY</u> from: Midnight to 10:00 a.m. 8:00 p.m. to Midnight Car washing - bucket or hand-held hose with automatic shut-off; 1 time every other week, or use a commercial car wash. No washing of driveways, sidewalks, or streets. No new filling or refilling of pools, but topping off of existing pools allowed on designated days. 	<p>Actions required of Customers</p> <ul style="list-style-type: none"> Continued water conservation practices and voluntary reductions in water use in general. Mandatory compliance with “Required Reductions” listed below. <p>Actions initiated by Lago Vista Water System</p> <ul style="list-style-type: none"> Flushing is limited to dead end mains and then only to maintain water quality. Check for and fix leaks promptly. <p>Required Customer Restrictions</p> <ul style="list-style-type: none"> Automatic Irrigation System WATERING SCHEDULES Midnight to 4:00 a.m. 8:00 p.m. to Midnight Hose End Sprinkler – Midnight to 4:00 a.m.; 7:00 p.m. to Midnight Hand Held Hose, faucet filled bucket or watering can - Watering landscaped areas allowed <u>ANY DAY at designated hours.</u> <u>No unattended hoses.</u> 7:00 a.m. to 10:00 a.m. 7:00 p.m. to 10:00 p.m. Soaker Hoses – Landscaped areas, <u>no lawns, ANY DAY</u> from: Midnight to 10:00 a.m. 8:00 p.m. to Midnight No washing of <u>cars</u>, driveways, sidewalks, or streets. No new filling or refilling of pools, but topping off of existing pools allowed on designated days. <p>Customer Consumption Limit: Lago Vista Water System can establish a monthly customer consumption limit if necessary to ensure meeting required reduction.</p>	<p>Actions required of Customers</p> <ul style="list-style-type: none"> Continued water conservation practices and voluntary reductions in water use in general. Mandatory compliance with “Required Reductions” listed below. <p>Actions initiated by Lago Vista Water System</p> <ul style="list-style-type: none"> Flushing is limited to dead end mains and then only to maintain water quality. Check for and fix leaks promptly. <p>Required Customer Restrictions</p> <ul style="list-style-type: none"> Automatic Irrigation System – <p>Prohibited at all times!</p> <ul style="list-style-type: none"> Hose End Sprinklers– Prohibited always! Hand Held Hose – Prohibited at all times! Watering Can - Landscaped areas & pot plants – ONLY DESIGNATED DAYS 7:00 a.m. to 9:00 a.m. 7:00 p.m. to 9:00 p.m. Soaker Hoses – FOUNDATIONS ONLY DESIGNATED DAYS 6:00 a.m. to 9:00 a.m. 7:00 p.m. to 10:00 p.m. No washing of cars, drives, streets, sidewalks. No new filling, refilling, or topping off of pools. No non-essential use, i.e., decorative fountains. Newly planted trees or shrubs <u>ANY DAY</u>: soaker bag or watering can. <p>Customer Consumption Limit: Lago Vista Water System can establish a monthly customer consumption limit if necessary to ensure meeting required reduction.</p>
<p>Penalties or Consequences</p> <ul style="list-style-type: none"> Warnings for excessive consumption. Installation of flow restrictors <u>for 2nd violation</u> of Stage I Restrictions. Service cutoff & reconnection fee <u>for 3rd violation</u> of Stage I Restrictions 	<p>Penalties or Consequences</p> <ul style="list-style-type: none"> Warnings for excessive consumption. Installation of flow restrictors <u>for 2nd violation</u> of Stage I Restrictions. Service cutoff & reconnection fee <u>for 3rd violation</u> of Stage I Restrictions 	<p>Penalties or Consequences</p> <ul style="list-style-type: none"> Installation of flow restrictors <u>for 1st violation</u> of Stage III Restrictions. Service cutoff & reconnection fee <u>for 2nd violation</u> of Stage III Restrictions.