

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC TARIFF FILING OF KENTUCKY-AMERICAN WATER COMPANY TO REVISE ITS CROSS-CONNECTION POLICY)	CASE NO.
)	2022-00425
)	

ORDER

On November 11, 2022, Kentucky-American Water Company (Kentucky-American) filed, through the Commission's electronic Tariff Filing System, to revise the section of its tariff pertaining to cross-connections. Kentucky-American responded to one request from information from Commission Staff. The response is included as an Appendix to this Order. Kentucky-American proposed an effective date of December 31, 2022.

LEGAL STANDARD

KRS 278.030 provides that a utility may collect fair, just and reasonable rates and that the service it provides must be adequate, efficient and reasonable. KRS 278.160(1) requires each utility to file with the Commission a tariff showing all rates and conditions for service established by it and collected and enforced.

BACKGROUND

Kentucky-American's current tariff prohibits cross-connections unless an acceptable form of protection against contamination by backflow into the water distribution system is provided by a testable backflow prevention assembly. The tariff states that acceptable forms of protection must comply with all applicable state and local requirements and be approved by Kentucky-American, that the protective device be

installed and maintained in good working condition at the expense of the customer, and that the protective device be subject to testing and approval of Kentucky-American prior to being placed into service, and at such times thereafter as may be deemed necessary by Kentucky-American. Any cross connection which is in violation of the abovementioned rules is required to be removed or corrected. Failure of a customer to do so could result in termination of water service.¹

PROPOSED REVISIONS TO THE CROSS-CONNECTION RULE

Kentucky-American has proposed to revise the cross-connection rule to add language that the protective device be subject to testing and approval required by Kentucky-American before being placed in service. In addition, Kentucky-American has added a sentence stating that the customer with such a protective device is responsible for the entire expense of testing, including, but not limited to, expenses and fees a third party may charge for performing the testing and submitting the test result to Kentucky-American electronically or otherwise.²

Kentucky-American indicated that they have proposed the above revisions in order to improve the efficiency of performing the required tests and submission of those tests to Kentucky-American. American Water Works Company, Inc. (American Water), Kentucky-American's parent company, has engaged Backflow Solutions, Inc. (BSI) to assist its operating subsidiaries in reminding customers of the need to test, and then to obtain and process the test results. A certified backflow device tester (tester) would need to test the protective device and then submit the test results to BSI, who would then submit the results to Kentucky-American. BSI would charge the tester a mandatory \$12.95

¹ P.S.C. KY NO. 9, First Sheet 14; P.S.C. KY NO. 9, First Sheet 15.

² Proposed P.S.C. NO. 9, Second Sheet 15.

processing fee. The tester could, in turn, pass the fee on to the customer based on an agreement between the tester and the customer. Kentucky-American would not charge such a fee to its customers and the fee would not appear on a customer's Kentucky-American bill. Kentucky-American states, though, that should a customer fail to comply with reasonable backflow prevention testing requirements and associated fees, the customer's water service would be terminated.³

DISCUSSION AND FINDINGS

Based upon a review of the tariff filing and being otherwise sufficiently advised, the Commission finds that Kentucky-American's proposed revisions are not fair, just or reasonable, and should be denied for the following reasons. The proposed revisions appear to move the testing and approval from Kentucky-American, to a scheme required by Kentucky-American. Customers would then be subject to costs and expenses charged by a third party, with such charges not being subject to Commission jurisdiction. Such concern is amplified by the fact that Kentucky-American has indicated that a customer's service would be terminated if they did not follow the proposed procedure. The current tariff language allows customers to choose their own third party for testing. While they still may be able to do so under the proposed tariff, another layer has been added which could subject customers to additional fees.

Thus for the reasons set forth above, the Commission denies Kentucky-American's proposed revisions to its cross-connection policy.

IT IS THEREFORE ORDERED that:

³ Letter from Lindsey W. Ingram III to Linda C. Bridwell (filed Nov. 11, 2022).

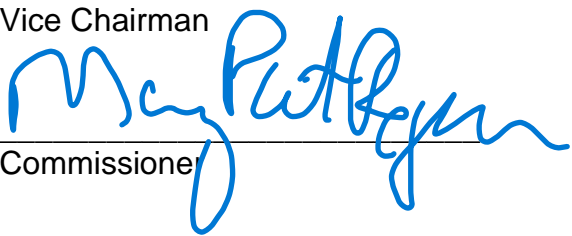
1. The Commission initiates this proceeding to investigate Kentucky-American's proposed revisions to its cross-connections policy.
2. Kentucky-American's proposed revisions to its cross-connection policy are denied.
3. This case is closed and removed from the Commission's docket.

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PUBLIC SERVICE COMMISSION


Chairman

Vice Chairman


Commissioner

ENTERED
DEC 22 2022
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KENTUCKY PUBLIC
SERVICE COMMISSION

ATTEST:


Executive Director

APPENDIX

APPENDIX TO AN ORDER OF THE KENTUCKY PUBLIC SERVICE
COMMISSION IN CASE NO. 2022-00425 DATED DEC 22 2022

FOURTEEN PAGES TO FOLLOW

Hinton, Daniel E (PSC)

From: Ingram III, Lindsey <L.Ingram@skofirm.com>
Sent: Friday, November 18, 2022 4:02 PM
To: Hinton, Daniel E (PSC)
Cc: Jeffrey Newcomb; Molly M Van Over
Subject: RE: KY-PSC Electronic Filing Center NotificationTFS2022-00546
Attachments: 815 KAR 20 120.pdf

****CAUTION** PDF attachments may contain links to malicious sites. Please contact the COT Service Desk ServiceCorrespondence@ky.gov for any assistance.**

Mr. Hinton:

Thank you for your inquiry. The very short answer is that the Kentucky Plumbing Code requires periodic inspection of backflow prevention devices after they are installed, and, of course, KAW must ensure compliance with that requirement.

I have attached a pdf of 815 KAR 20:120 which is an administrative regulation under the Kentucky Plumbing Code. It addresses the methods to be used to protect and control water supply systems like KAW's. I have highlighted certain relevant provisions. You will see that it requires backflow and back siphonage protection devices where there are cross connections (such as a lawn irrigation system). So, in that cross connection situation, backflow and back siphonage protection devices must exist. See Section 1(4) and Section 1(7). The regulation also requires that those devices be tested "periodically" and for certain types of devices, they must be tested annually. See Section 1(7)(b) and Section 1(7)(h). These devices are mechanical in nature (they open and close) and usually contain springs, so they can and do fail over time. Because they do fail, the Ky. Plumbing Code requires these periodic inspections. For KAW customers, that means annual inspections to ensure adequate protection of water supply. I have snipped and pasted Section 1(7)(h) below. The regulation can also be found at the following site: <https://apps.legislature.ky.gov/law/kar/titles/815/020/120/>

(h) Inspection of devices.

1. A periodic inspection shall be made of each backflow and back siphonage preventer determine if it is in proper working condition.
2. A reduced pressure principle back pressure backflow preventer shall be tested on at least an annual basis.
3. Records shall be kept on each inspection.

I trust this answers your question, but if it does not or you or the Commission have any other questions, please do not hesitate to let me know. Thanks very much.



Lindsey W. Ingram III
859-231-3982 Direct

300 West Vine Street, Ste. 2100
Lexington, KY 40507

From: Hinton, Daniel E (PSC) <dehinton@ky.gov>
Sent: Thursday, November 17, 2022 10:54 AM
To: Ingram III, Lindsey <L.Ingram@skofirm.com>
Subject: RE: KY-PSC Electronic Filing Center NotificationTFS2022-00546

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Mr. Ingram,

Under what circumstances would Kentucky-American find it necessary to test a customer's required protective device or system after the initial test following its installation?

The response can be emailed to me at this address.

If you have any questions, please let me know.

Thanks.

Daniel

From: KY Public Service Commission <psc.tariffs@ky.gov>
Sent: Friday, November 11, 2022 9:38:16 AM (UTC-05:00) Eastern Time (US & Canada)
To: l.ingram@skofirm.com <l.ingram@skofirm.com>
Cc: PSC Tariffs <psc.tariffs@ky.gov>
Subject: KY-PSC Electronic Filing Center NotificationTFS2022-00546

This notification has been sent to you regarding your recent Tariff filing : TFS2022-00546 file(s) have been transmitted successfully.
Documents received for Tariff filing: TFS2022-00546 for Kentucky-American Water Company
11/11/2022 9:38:11 AM

File Summary:

File Name: KAW_CLRead1st_111122.pdf

Description: Cover Letter

File Name: Tariff_Sheets.pdf

Description: Tariff

Thank you.

815 KAR 20:120. Water supply and distribution.

RELATES TO: KRS 318.130, 318.150, 318.165,
STATUTORY AUTHORITY: KRS 198B.040(10), 318.130

NECESSITY, FUNCTION, AND CONFORMITY: KRS 318.130 requires the department to promulgate administrative regulations establishing the Kentucky State Plumbing Code regulating plumbing, including the methods and materials that may be used in Kentucky. This administrative regulation establishes the types of piping and pipe sizes required for a potable water supply system and the methods to be used to protect and control the water supply system and requires the manufacturer's specification number of the material accepted in those installations to be identified and published.

Section 1. Quality.

(1) The bacteriological and chemical quality of the water supply shall comply with the administrative regulations of the department and the Energy and Environment Cabinet, Department for Environmental Protection, Division of Water KAR Title 401. Toxic material shall be kept out of a potable water system.

(a) The pipe conveying, and each surface in contact with, potable water shall be constructed of nontoxic material.

(b) A chemical or other substance that may produce either a toxic condition, taste, odor, or discoloration in a potable water system shall not be introduced into, or used in, the system.

(c) The interior surface of a potable water tank shall not be lined, painted, or repaired with a material that will affect the taste, odor, color, or portability of the water supply if the tank is placed in, or returned to, service.

(2) Potable water shall be accessible to a plumbing fixture that supplies water for drinking, bathing, culinary use or the processing of a medicinal, pharmaceutical, or food product.

(3) The potable water supply system shall be designed, installed, and maintained to prevent contamination from a nonpotable liquid, solid, or gas being introduced into the potable water supply through a cross connection or other piping connection to the system.

(4) A cross connection shall meet the requirements of this administrative regulation.

(5) A cross connection between a private water supply and a public water supply shall not be made.

(6) Closed water systems, protection from excess pressure.

(a) If a single check valve is installed in a water system, a thermal expansion tank sized in accordance with manufacturer's instructions or other pressure relief device listed in 815 KAR 20:020 shall be installed in the cold water supply located near the water heater.

(b) If a backflow preventer is installed in a water system, a properly sized thermal expansion tank or other pressure relief device listed in 815 KAR 20:020 shall be installed in the water distribution system.

(c) If a pressure reducing valve not equipped with a bypass is installed in the cold water supply line to a water heater, a thermal expansion tank or other pressure relief device listed in 815 KAR 20:020 shall be installed in the cold water line near the water heater.

(7) Backflow and back siphonage protection. Protection against backflow shall be provided as required in paragraphs (a) through (l) of this subsection in order of degree of protection provided. Backflow shall include both back pressure and back siphonage.

(a) An air gap shall provide the best level of protection in all backflow situations. The minimum required air gap shall be determined as follows:

1. Measurement. The minimum required air gap shall be measured vertically from the lowest end of a potable water outlet to the flood rim or line of the fixture or receptacle into which it discharges.

2. Size. The minimum required air gap shall be:

a. Twice the effective opening of a potable water outlet; or

b. If the outlet is a distance less than three (3) times the effective opening away from a wall or similar vertical surface, three (3) times the effective opening of the outlet.

3. The minimum required air gap shall not be less than shown in the following table - Minimum Air Gaps for Plumbing Fixtures.

MINIMUM AIR GAPS FOR PLUMBING FIXTURES

Fixture	Minimum Air Gap	
	When not affected by near wall (inches)	When affected by near wall (inches)
Lavatories and other fixtures with effective opening not greater than 1/2 inch diameter	1	1 1/2
Sink, laundry trays, gooseneck bath faucets and other fixtures with effective openings not greater than 3/4 inch diameter	1 1/2	2 1/4
Over rim bath fillers and other fixtures with effective openings not greater than 1 inch diameter	2	3
Drinking water fountains – single office not greater than 7/16 (0.437) inch diameter or multiple orifices having total area of 0.150 square inches (area of circle 7/16 inch diameter)	1	1 1/2
Effective openings greater than 1 inch	2 x diameter of effective opening	3 x diameter of effective opening

NOTE 1. Side walls, ribs, or similar obstructions do not affect air gaps if spaced from the inside edge of the spout opening a distance greater than three (3) times the diameter of the effective opening for a single wall, or a distance greater than four (4) times the diameter of the effective opening for two (2) intersecting walls.

NOTE 2. Vertical walls, ribs, or similar obstructions extending from the water surface to or above the horizontal plane of the spout opening require a greater air gap if spaced closer to the nearest inside edge of spout opening than specified in NOTE 1 above. The effect of three (3) or more vertical walls or ribs has not been determined. In this case, the air gap shall be measured from the top of the wall.

(b) Reduced pressure principle back pressure backflow preventer. A reduced pressure principle back pressure backflow preventer shall provide the best mechanical protection against backflow available and shall be considered equivalent to an air gap.

(c) Double check valve assembly. This device shall be a manufactured assembly consisting of two (2) independently acting check valves and including a shutoff valve at each end, and petcock and test gauge for testing the watertightness of each check valve.

(d) Pressure type vacuum breaker.

(e) Atmospheric type vacuum breaker. If applicable, an atmospheric type vacuum breaker shall be installed after the last cutoff valve on the water line. This device may operate under normal atmospheric pressure if the critical level (CL) is installed at the required height in accordance with the table in this paragraph:

CRITICAL LEVEL (CL) SETTINGS FOR ATMOSPHERIC TYPE VACUUM BREAKERS

Fixture or Equipment	Method of Installation
Aspirators, ejectors, and showers	CL at least 6 in. above flood level of receptacle
Bidets	CL at least 6 in. above flood level of receptacle

Cup beverage vending machines	CL at least 12 in. above flood level of machine
On models without built-in vacuum breakers:	
Dental units	CL at least 6 in. above flood level rim of bowl
Dishwashing machines	CL at least 6 in. above flood level of machine
Flushometers (closet & urinal)	CL at least 6 in. above top of fixture supplied
Garbage can cleaning machines	CL at least 6 in. above flood level of machine
Hose bibs (sinks or receptacles)	CL at least 6 in. above flood level of receptacle served
Hose outlets	CL at least 6 in. above highest point on hose line
Laundry machines	CL at least 6 in. above flood level of machine
Lawn Sprinklers	CL at least 12 in. above highest sprinkler or discharge outlet
Steam tables	CL at least 12 in. above flood level
Tanks & vats	CL at least 6 in. above flood level rim or line

(f) Barometric loop. The use of a barometric loop shall not be acceptable as the primary back siphonage preventer.

(g) Location of backflow and back siphonage preventers.

1. A backflow and back siphonage preventer shall be in an accessible location, and accessible from within the same room as the fixture or connection it protects.
2. A backflow device may be installed in a utility or service space.
3. A device or air gap shall not be installed in a location subject to flooding or freezing.

(h) Inspection of devices.

1. A periodic inspection shall be made of each backflow and back siphonage preventer to determine if it is in proper working condition.
2. A reduced pressure principle back pressure backflow preventer shall be tested on at least an annual basis.
3. Records shall be kept on each inspection.

(i) Approval of devices.

1. Before a device for the prevention of backflow or back siphonage is installed, it shall be identified as meeting the applicable specifications as listed in the application chart included in paragraph (k) of this subsection.
2. A device installed in a building potable water supply distribution system for protection against backflow shall be maintained in good working condition by the person responsible for the maintenance of the system.

(j) Degree of hazard. The protection required at an outlet or connection shall be determined based on the degree of hazard posed by that outlet or connection as follows:

1. Severe hazard, if there is potential for contamination by a toxic substance or disease-causing organism;
2. Moderate hazard, if there is potential for contamination by a nontoxic but objectionable substance; or
3. Minor hazard, if there is potential for contamination by a generally nontoxic, nonobjectionable substance, but which may cause the consumer to question the quality of water.

(k) Minimum acceptable protection. An opening or outlet shall be protected by an air gap between the opening and flood level rim if possible. The acceptable protection for various types of outlets or connections shall be as shown in the tables in this paragraph:

APPLICATION TABLE

TYPE AND PRESSURE	DESCRIPTION	INSTALLED AT	EXAMPLES OF INSTALLATIONS	APPLICABLE SPECIFICATIONS
Reduced pressure principle backflow preventer for high hazard cross connections	Two independent check valves with intermediate relief valve. Supplied with shutoff valves and ball-type test cocks.	All cross connections subject to backpressure or back siphonage if there is a high potential health hazard from contamination. Continuous pressure.	Main supply lines, commercial boilers, cooling towers, hospital equipment, processing tanks, laboratory equipment, waste digesters, car wash, sewage treatment, lawn sprinklers	ASSE No. 1013 AWWA C506 FCCCHR of U.S.C. CSA B.64.4 Sizes 3/4" - 10"
(A) Double check valve assembly for low hazard cross connections	Two independent check valves. Supplied with shutoff valves and ball type test cocks.	All cross connections subject to back pressure if there is a low potential health hazard or nuisance. Continuous pressure.	Main supply lines, food cookers, tanks and vats, commercial pools	ASSE No. 1015 AWWA C506 FCCCHR of U.S.C. CSA B.64.5 Sizes 3/4" - 10" NONTOXIC
(B) Dual check valve backflow preventer for low hazard applications	Two independent check valves. Checks are removable for testing	Cross connections if there is a low potential health hazard and moderate flow requirements.	Post ground hydrants	ASSE No. 1024 Sizes 3/4" & 1"
(A) Backflow preventer with intermediate atmospheric vent for moderate hazard cross connections in small pipe sizes	Two independent check valves with intermediate vacuum breaker and relief valve.	Cross connections subject to back pressure or back siphonage if there is a moderate health hazard. Continuous pressure.	Boilers (small), cooling towers (small), dairy equipment residential	ASSE No. 1012 CSA B.64.3 Sizes 1/2" & 3/4"

		On potable water distribution lines serving beverage dispensing equipment to prevent backflow of carbon dioxide gas and carbonated water into the water supply system.		
(B)	Backflow preventer for carbonated beverage machine	Two independent check valves with a vent to atmosphere	Postmix carbonated beverage machine	ASSE 1022
(C)	Laboratory faucet and double check valve with intermediate vacuum breaker in small pipe sizes for moderate to low hazard	Two independent check valves with intermediate vacuum breaker and relief vent.	Cross connection subject to back pressure or back siphonage if there is a moderate to low health hazard.	Laboratory faucets and pipe lines, barber shop and beauty parlor sinks ASSE No. 1035 (N-LF9)
(A)	Atmospheric vacuum breakers for moderate to high hazard cross connections	Single float and disc with large atmospheric port.	Cross connections not subject to backpressure or continuous pressure. Install at least 6" above fixture rim. Protection against back siphonage only.	Process tanks, dishwashers, soap dispensers, washing machines ASSE No. 1001 ANSI.A112.1.1 CSA B.64.1.1 FCCCHR of U.S.C. Sizes 1/4" - 3"

		This valve is designed for installation in a continuous pressure potable water supply system 12" above the overflow level of the system being supplied. Protection against back siphonage only.	Laboratory equipment, cooling towers, commercial laundry machines, swimming pools, commercial plating tanks, large toilet total & urinal facilities, degreasers, photo tanks, livestock water systems, lawn sprinklers	
(B) Antisiphon pressure breakers for moderate to high hazard cross connections	Spring loaded single float and disc with independent 1st check. Supplied with shutoff valves and ball type test cocks.			ASSE No. 1020 CSA B.64.1.2 FCCCHR of U.S.C. Sizes 1/2" - 2"
(C) Hose connection vacuum breakers for residential and industrial hose supply outlets	Single check with atmospheric vacuum breaker vent.	Install directly on hose bibs, service sinks and wall hydrants. Not for continuous pressure.	Hose bibs, service sinks, hydrants	ASSE No. 1011 CSA B.64.2 Size 3/4" Hose

CROSS CONNECTIONS, DEGREE OF HAZARD AND ACCEPTABLE PROTECTION FOR VARIOUS PLUMBING OUTLETS AND CONNECTIONS

Type of Connection	Degree of Hazard			Acceptable Protection			
	Severe	Moderate	Minor	Backflow		Backsiphonage	
				Air Gap	Reduced Pressure Device	Double Check Valve Assembly	Pressure Type Vacuum Breaker

I. Connections subject to back pressure from:

A. Pumps, tanks, and lines handling:

1. Toxic substance	X			X	X	
2. Nontoxic substance		X		X	X	X

B. Boilers

1. With chemical additives	X			X	X	
2. Without chemical additives		X		X	X	X

C. Gravity due to obvious site conditions subject to:

1. Contamination by toxic substances X

X X

2. Contamination by nontoxic substances X

X X X

II. Water outlets and connections not subject to back pressure:

A. Connection to sewer or sewage pump X

X

B. Outlet to receptacles containing toxic substances X

X X X X

C. Outlet to receptacles containing nontoxic substances X

X X X X X

D. Outlet into domestic water tanks X

EACH CASE TREATED SEPARATELY

E. Flush valve toilets X

X X X X

F. Flush valve urinals X

X X X X

G. Outlets with hose attachments subject to contamination from:

1. Toxic substance X

X X X X

2. Nontoxic substance X

X X X X

H. Outlets to recirculating cooling tower:

1. With chemical additives X

X X

2. Without chemical additives	X	X	X	X
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(l) Protection of potable water system. A potable water opening, outlet, or connection, except one (1) that serves a residential unit, shall be protected against backflow in accordance with paragraphs (a) through (k) of this subsection.

Section 2. Water Required.

- (1) A building equipped with a plumbing fixture and used for habitation or occupancy shall be equipped with a supply of potable water.
- (2) In a building used as a residence or a building in which people assemble or are employed, both hot and cold water shall be supplied.

Section 3. Water Service.

- (1) The water service piping to a building shall:
 - (a) Not be less than three-fourths (3/4) inch nominal pipe size; and
 - (b) Be of sufficient size to permit a continuous and ample flow of water to each fixture in the building.
- (2) If the water service piping is made of plastic or other nonconductive piping, the water service piping shall be installed with an insulated copper tracer wire adjacent to the piping.
 - (a) Access shall be provided to the tracer wire within the building at the main supply control valve.
 - (b) The tracer wire shall:
 - 1. Not be less than eighteen (18) AWG; and
 - 2. Be suitable for direct burial.
- (3) Except as provided in this subsection, the underground water service pipe from the main or water supply system to the water distribution system shall not be less than five (5) feet apart horizontally from the house sewer and shall be separated by undisturbed or compacted earth. The pipe may be placed in the same trench if:
 - (a) The bottom of the water service pipe at all points is at least eighteen (18) inches above the top of the sewer at its highest point;
 - (b) The water service pipe is placed on a solid shelf excavated at one (1) side of the common trench; and
 - (c) The number of joints in the water service pipe is kept to a minimum.
 - (d)
 - 1. If the water service pipe and sewer intersect, then a sleeve shall be used on the water service pipe extending five (5) feet on either side of the intersection.
 - 2. The sleeve shall be of material approved for water service pipe as established in 815 KAR 20:020.
 - 3. The sleeve shall be sealed on each end to prevent debris from entering the sleeve.

Section 4. Distribution.

- (1) The water supply shall be distributed through a piping system entirely independent of another piping system.
- (2) Piping which has been used for a purpose other than conveying potable water shall not be used for conveying potable water.
- (3) Nonpotable water may be used for flushing a water closet or urinal, if the water is piped in an independent system.
 - (a) If a dual water distribution system is used, the nonpotable water supply shall be durably and adequately identified.
 - (b)
 - 1. An outlet on the nonpotable water distribution system used for a drinking or domestic purpose shall be permanently posted: DANGER - UNSAFE WATER.
 - 2. Each branch, fitting, or valve shall be identified by the phrase - "NONPOTABLE WATER" either by a sign or brass tag that shall be permanently affixed to the pipe, fitting, or valve.
 - 3. The identification marking shall not be concealed and shall be maintained by the owner.

- (4) A backflow device or cross-connection control device shall be approved by the department.
- (5) A combination stop and waste valve, cock, or hydrant shall not be installed in the underground water distribution system without the installation of an approved backflow preventer.
- (6) A private water supply shall not be interconnected with a public water supply.
- (7) Water used for cooling of equipment or in another process shall not be returned to the potable water system. The water shall be discharged into a drainage system through an air gap, or used for a nonpotable purpose as referenced in this section.
- (8) Hose connections other than those intended for clothes washing machines, frost proof burial hydrants, and water heater drain valves shall be equipped with a vacuum breaker ASSE 1011 for areas not subject to freezing and a vacuum breaker ASSE 1019 for areas subject to freezing.

Section 5. Water Supply to Fixtures.

- (1) A plumbing fixture shall be provided with a sufficient supply of water for flushing to keep them in a sanitary condition.
- (2) A water closet or pedestal urinal shall be flushed by means of an approved tank or flush valve.
- (3) The tank or valves shall furnish at least a sufficient amount of water to thoroughly cleanse the surface area of a water closet, urinal, or similar fixture.
- (4) If a water closet, urinal, or similar fixture is supplied directly from the water supply system through a flushometer or other valve, the valve shall be set above the fixture to prevent the possibility of polluting the potable water supply by back siphonage.
- (5) The fixture shall have a vacuum breaker.
- (6) A plumbing fixture, device or appurtenance shall be installed in a manner that shall prevent a possibility of a cross connection between the potable water supply system, drainage system, or other water system.

Section 6. Connections to Boilers.

- (1) A potable water connection to a boiler feed water system in which a boiler water conditioning chemical is introduced shall be made through an air gap, or provided with a reduced pressure principle backflow preventer located in the potable water line before the point where a chemical is introduced.
- (2) A boiler shall be equipped with a check valve in the cold water supply to the boiler.

Section 7. Water Supply to Drinking Fountains. The orifice of a drinking fountain shall be provided with a protective cowl to prevent contamination of the potable water supply system.

Section 8. Sizing of Water Supply Piping.

- (1)
 - (a) The minimum size water service from the property line to the water heater shall be three-fourths (3/4) inch.
 - (b) The hot and cold water piping shall extend three-fourths (3/4) inch in size to the first fixture branch.
 - (c) More than three (3), one-half (1/2) inch fixture branches shall not be supplied from a one-half (1/2) inch pipe.
- (2)
 - (a) The schedule in this subsection shall be used for sizing the water supply piping to a fixture.
 - (b) The branch pipe to a fixture shall terminate not more than thirty (30) inches from the point of connection to the fixture and shall be brought to the floor or wall adjacent to the fixture.
 - (c) A concealed water branch pipe shall not be less than one-half (1/2) inch nominal pipe size.

Fixture Branches	Nominal Pipe Size (Inches)
Bath tubs	1/2
Combination sink and tray	1/2
Cupsidor	1/2
Drinking fountain	1/2
Dishwasher (domestic)	1/2
Kitchen sink (res.)	1/2
Kitchen sink (com.)	1/2 or 3/4 as required

Lavatory	1/2
Laundry tray	1/2
Sinks (service, slop)	1/2
Sinks flushing rim	3/4
Urinal (flush tank)	1/2
Urinal (direct flush type)	1/2 or 3/4 as required
Water closet (tank type)	1/2
Water closet (flush valve type)	1
Hot water boilers	3/4
Hose bibs	1/2
Wall hydrant	1/2
Domestic clothes washer	1/2
Shower (single head)	3/4

(3) Water hammer. In a building supply system in which a device or appurtenance is installed utilizing a quick acting valve that causes noise due to water hammer, a protective device, including an air chamber or approved mechanical shock absorber, shall be installed as close as possible to the quick acting valve causing the water hammer.

- (a) If a mechanical shock absorber is installed, the absorber shall be in an accessible place.
- (b) If a mechanical device is used, the manufacturer's specifications shall be followed as to location and method of installation.

Section 9. Water Supply Pipes and Fittings, Materials.

(1) Water supply piping for a potable water system shall be as follows:

- (a) Galvanized wrought iron;
- (b) Galvanized steel;
- (c) Brass;
- (d) Types K, L, and M copper;
- (e) Cast iron;
- (f) Types R-K, R-L, and R-M brass tubing;
- (g) Fusion welded copper tubing produced and labeled as ASTM B447 and ASTM B251;
- (h) Seamless stainless steel tubing produced and labeled as ASTM A269 or ASTM A312;
- (i) Filament-wound reinforced thermosetting resin pipe produced and labeled as ASTM D2996 (red thread for cold water use and silver and green thread for hot and cold);
- (j) PE pipe produced and labeled as ASTM D2239 or ASTM F714;
- (k) PEX pipe produced and labeled as ASTM F876 for cold water and ASTM F877 for hot or cold water applications;
- (l) Pex-Al-Pex pipe produced and labeled as ASTM F1281;
- (m) Pe-Al-Pe pipe produced and labeled as ASTM F1282;
- (n) Copper tubing size PE produced and labeled as ASTM D2737 for water service, if installed with compression couplings;
- (o) PVC pipe produced and labeled as ASTM D1785;
- (p) CPVC pipe produced and labeled as ASTM D2846;
- (q) Schedule 80 CPVC pipe shall meet ASTM F441;
- (r) Schedule 80 CPVC solvent fittings shall meet ASTM F439;
- (s) Schedule 80 CPVC threaded fittings shall meet ASTM F437;
- (t) Schedule 80 CPVC pipe and fittings shall be installed using primer meeting ASTM F656 and solvent cement meeting ASTM F493;
- (u) PVC standard dimensional ratio (SDR) 21 and (SDR) 26 pipe produced and labeled as ASTM D2241;
- (v) Fusion welded PP products measuring one-half (1/2) inch to eighteen (18) inches in diameter which meet NSF Standards 61 and 14, and ASTM F2389, shall be approved. These pipe products shall be tested for compliance with the manufacturer's installation instructions;

- (w) Fusion welded high density PE pipe products which meet NSF Standards 61 and 14, and ASTM F3035 and F714, shall be approved for underground use. These pipe products shall be tested for compliance with the manufacturer's installation instructions;
 - (x) Push-fit fitting systems which meet the ASSE Standard 1061. Except as established in 815 KAR 20:020, these systems are approved for above-ground use only using pipe sizes up to two (2) inches; or
 - (y) PE-RT Piping meeting ASTM F2769.
- (2) A plastic pipe or fitting shall bear the NSF seal of approval.
 - (3) PB pipe utilizing an insert fitting of brass or copper shall use a copper clamping ring.
 - (4) A PB hot and cold water connector to a lavatory, sink, or water closet shall be produced and labeled as ASTM D3309, and PB plastic pipe shall be produced and labeled as ASTM 2662 for a cold water application.
 - (5) A fitting shall be brass, copper, approved plastic, galvanized cast iron, or galvanized malleable iron. Piping or a fitting that has been used for another purpose shall not be used for the water distribution system.
 - (6) Each joint in the water supply system shall be made of a screw, solder, or plastic joint. A cast iron water pipe joint may be caulked, screwed, or machine drawn.
 - (7) If Type M copper pipe, Type R-M brass tubing, standard high frequency welded tubing or stainless steel tubing is placed within a concrete floor or passes through a concrete floor, it shall be wrapped with an approved material to permit expansion or contraction.
 - (8) PVC shall not be used below ground under a house or building. If a CPVC joint or connection is installed below ground under a house or building, the water distribution system shall be tested to at least 100 pounds per square inch before backfilling. The applicable requirements of 815 KAR 20:060 shall be met.
 - (9) The joint between ferrous piping and copper or copper-alloy piping shall be made with a dielectric fitting or other insulating fitting to prevent electrolysis.

Section 10. Temperature and Pressure Control Devices for Shower Installations. A temperature or pressure balance device to prevent a sudden unanticipated change in water temperature shall be installed to serve each shower compartment and shower-bath combination.

Section 11. Water Supply Control.

- (1) A main shutoff valve shall be provided near the curb, in or near the meter box or property line on the water service pipe. The main supply control valve shall be a full port valve and be accessible from within the occupied space and provided with a drip or drain valve. A pit or similar type installation shall not be used for a potable water supply shutoff valve.
- (2) A pressure or gravity tank shall have its supply line valved at or near its source.
- (3) A family unit in a two (2) family or multifamily dwelling shall have the unit controlled by an arrangement of shutoff valves which will permit the unit to be shut off without interfering with the cold water supply to another family unit or portion of the building.
- (4) In a building other than a dwelling, a shutoff valve shall be installed to permit the water supply to the equipment to be isolated without interference with the supply to other equipment.
- (5) A fixture or group of bath fixtures shall be valved and a lawn sprinkler opening shall be valved. In residential construction, each fixture, except a bathtub or shower, shall be valved individually or as a group of fixtures.
- (6) A group of fixtures or a fixture group shall include two (2) or more fixtures adjacent to or near each other in the same room or back-to-back on a common wall.
- (7) The cold water branch to a hot water storage tank or water heater shall be provided with a shutoff valve located near the equipment and serving this equipment. In residential dwellings, the shutoff valve shall be placed within three (3) feet of the water heater and be accessible from the accessible side of the water heater.

Section 12. Water Supply Protection.

- (1) A concealed water pipe, storage tank, cistern, or other exposed pipe or tank subject to freezing temperatures shall be protected against freezing. A water service shall be installed at least thirty (30) inches in depth.
- (2) A relief device shall be installed on a pneumatic water system.

Section 13. Protection of a Private Water Supply or Source. A private water supply or source shall be protected from pollution. Approval shall be obtained from the division prior to using the private water supply or source.

Section 14. Tanks and Vats below Rim Supply. A tank or vat with potable water supply below the rim shall be subject to the following requirements:

- (1) If a potable water outlet terminates below the rim of a tank or vat and the tank or vat has an overflow of diameter not less than given in the table in this subsection, the overflow pipe shall be provided with an air gap as close to the tank as possible;

Sizes of Overflow Pipes for Water Supply Tanks

Maximum capacity of water supply line to tank	Diameter of Overflow pipe (inches ID)	Maximum capacity of water supply line to tank	Diameter of overflow pipe (inches ID)
0-50 gpm	2	400-700 gpm	5
50-150 gpm	2 1/2	700-1000 gpm	6
150-200	3	Over 1000 gpm	8

- (2) The potable water outlet to the tank or vat shall terminate at a distance not less than one and one-half (1 1/2) times the height to which water can rise in the tank above the top of the overflow. This level shall be established at the maximum flow rate of the supply to the tank or vat, and with all outlets, except the air gap overflow outlet, closed; and

- (3) The distance from the outlet to the high water level shall be measured from the critical point of the potable water supply outlet.

Section 15. Fire Protection Systems. Except if installing an NFPA 13D fire protection system in a one (1) or two (2) family dwelling, a fire protection system using water from the potable water distribution system shall be equipped with two (2) check valves, one (1) of which may be an alarm check valve.

Section 16. Conservation of water shall comply with the standards established in 815 KAR 20:070. (1 Ky.R. 485; eff. 3-12-1975; Am. 2 Ky.R. 457; eff. 4-14-1976; 3 Ky.R. 450; eff. 1-5-1977; 4 Ky.R. 190; 425; eff. 5-3-1978; Recodified from 401 KAR 1:090, 7-5-1978; 5 Ky.R. 163; eff. 10-4-1978; 7 Ky.R. 513; eff. 1-7-1981; 647; 849; eff. 6-3-1981; 9 Ky.R. 49; eff. 8-11-1982; 1242; eff. 6-1-1983; 10 Ky.R. 1013; eff. 3-31-1984; 11 Ky.R. 74; eff. 8-7-1984; 802; 1259; eff. 2-12-1985; 12 Ky.R. 436; eff. 11-12-1985; 1667; eff. 5-6-1986; 13 Ky.R. 1656; eff. 4-14-1987; 14 Ky.R. 636; eff. 11-6-1987; 1135; eff. 1-4-1988; 15 Ky.R. 605; 974; eff. 9-28-1988; 16 Ky.R. 904; eff. 1-12-1990; 2767; 17 Ky.R. 1100; eff. 8-22-1990; 2269; eff. 3-13-1991; 18 Ky.R. 2894; eff. 5-1-1992; 19 Ky.R. 816; eff. 11-9-1992; 2113; eff. 7-12-1993; 20 Ky.R. 3119; eff. 7-7-1994; 21 Ky.R. 1967; eff. 3-22-1993; 22 Ky.R. 800; eff. 12-7-1995; 23 Ky.R. 1757; 2739; eff. 1-9-1997; 24 Ky.R. 2465; eff. 7-13-1998; 25 Ky.R. 1187; eff. 2-18-1999; 2961; 26 Ky.R. 388; eff. 8-16-1999; 27 Ky.R. 2244; 2801; eff. 3-22-2001; 29 Ky.R. 1392; 1812; eff. 1-16-2003; 32 Ky.R. 369; 660; eff. 11-4-2005; 2371; 33 Ky.R. 411; eff. 9-1-2006; 3266; 4174; eff. 7-6-2007; 35 Ky.R. 2601; 36 Ky.R. 93; eff. 7-29-2009; 39 Ky.R. 2210; eff. 8-2-2013; 43 Ky.R. 466, 689; eff. 11-16-2016; 46 Ky.R. 1674,2436; eff. 6-2-2020.)

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