



City of Kingston
Report to Environment, Infrastructure and Transportation Policies Committee
Report Number EITP-15-022

To: Chair and Members of the Environment, Infrastructure and Transportation Policies Committee

From: Jim Keech, President and CEO, Utilities Kingston

Date of Meeting: October 13, 2015

Subject: Frozen Water Services

Executive Summary:

The very cold temperatures of last winter resulted in an increase in frozen water services for many communities in Ontario. The City of Kingston experienced a higher than 'normal' number of water services that froze, resulting in homeowners not having a supply of water from the municipal drinking water system. A typical winter results in less than 10 services being affected, whereas last year we estimate that there were approximately 200 affected services of which 100 were reported to Utilities Kingston.

The purpose of this report is to establish a policy and communicate proposed work practices in advance of similar circumstances that may occur in the future.

Recommendation:

That Council approve the policy as presented in Appendix A.

October 13, 2015

Page 2 of 6

Authorizing Signatures:

ORIGINAL SIGNED BY PRESIDENT & CEO, UTILITIES KINGSTON

Jim Keech, President and CEO,

Utilities Kingston

October 13, 2015

Page 3 of 6

Options/Discussion:

The past winter saw exceptionally cold temperatures that stayed below freezing for an extended period of time. Of over 37,000 municipal water services, approximately 100 frozen water services were reported to Utilities Kingston during February/March of 2015. Please note that this number includes only those services that were reported to Utilities Kingston and does not include any frozen services that homeowners dealt with directly. Based on some enquiries this may have been an additional 100 services.

The number of frozen water services that are experienced each year is highly variable and dependent on factors such as temperature, frost depth and snow cover. Some winters we have none and others it may be approximately less than ten.

Water services are the responsibility of the homeowner from the service shut off valve which is typically located at the property line. In our experience, freezing often originates on the customers service due to the shallower depth of the service and lower water flows, however, it can be difficult to be certain about where the freezing has occurred. In the past we have assisted homeowners who contact us in thawing their services. Where it can be determined that the service has frozen on the homeowners side of the service, charges may be applied in accordance with By-Law 2011-24 A By-Law to Impose Water and Wastewater Rates , as amended.

This past winter, as we have previously, Utilities Kingston initially sent crews to assist homeowners by thawing services. This was done by booking appointments with homeowners as they called in; the first person to call in was dealt with first, second person second, and so on. As more calls came in, we stopped making appointments and established a "list" of customers with frozen services. We provided these customers an estimate as to how long they would have to wait before we would get to their service. The "list" was based on when the person called in. No other factors impacted where a customer went on the "list". When a new customer called in they were added to the bottom of the list and were assisted when all others above them were dealt with.

The number of frozen services that were being called in far exceeded our expectations based on past experience. In addition, as a result of the cold we experienced this winter, in many instances the work to thaw the services was much more difficult and time consuming than typical. In many cases the equipment normally utilized to thaw the services did not work and we had to excavate. Excavations of services, in many cases on private property, with the amount of frost in the ground that existed this past winter was very difficult, time consuming, and expensive. With the extreme temperatures experiences some of the services we thawed ended up freezing again.in which case these services were added back to the list.

The severe cold also resulted in an increase in the number of water main breaks that our crews had to deal with. As can be appreciated, repairing broken water mains takes precedence over

October 13, 2015

Page 4 of 6

repairing services, especially in the winter time when water quickly freezes and creates serious safety issues on roadways, sidewalks, driveways etc.

To assist Utilities Kingston crews in keeping appointments as a result of the two items detailed above, we hired private contractors/plumbers. In some cases these contractors worked alongside our crews, and sometimes on their own, but always under the direction of Utilities Kingston personnel. Where we hired contractors, Utilities Kingston paid for the expenses incurred.

It is not unusual for Utilities Kingston to hire contractors to assist our crews. This happens for a variety of different type of work for all the services (water, sewer, gas, electric, fibre, appliance rentals) we provide. We use contractors for various reasons, sometimes it is based on work load or sometimes for the equipment they may have.

As in past winters, it was our initial desire to assist homeowners in restoring their service to normal. As we continued to add to the "list", it became obvious we were getting more new frozen services in a week than we were able to thaw. As wait times grew, some customers asked what the alternative was to waiting for us and they were advised that they could hire a plumber at their expense.

It became evident that the situation of the number of frozen services was getting to a point that we needed to look at an alternative way to dealing with this issue. Wait times were over two weeks and the number of new frozen services in a day exceeded the number we were thawing.

It was at that point we made the decision to run temporary water from a neighbor's house to the home with the frozen service, and to stop trying to thaw the services. This was done by connecting hoses between the outside hose bib of the neighbor and the home with the frozen service. We asked that the homeowner getting the water to leave a tap running slowly so this would cause continuous movement of water in the hose and prevent freezing. This decision permitted us to restore water to all customers within three days.

This temporary remedy was not without its issues. Water pressure was obviously reduced, but sufficient for basic service, however we did receive some complaints. In some instances the temporary hoses froze and we had to remove and install a replacement hose. Throughout this, we did not lose sight of maintaining a safe supply of drinking water. The hosing that was used was not garden hose but rather hosing designed to deliver potable water. Vacuum breakers were installed to ensure back flow prevention. If the policy as presented is approved, it is the intention of Utilities Kingston to finish work on a procedure describing the installation of temporary services. To prepare for future events we have stocked additional quantities of temporary hose as well as insulation for the temporary hose.

With respect to charges, the homeowners who provided the supply of water, were charged the normal fixed service charge but were reimbursed for all water and sewer consumption charges for the water used, as we could not determine what they used and what the receiver used. In

October 13, 2015

Page 5 of 6

In addition, the customer with the frozen service, the receiver, was given a similar credit to help compensate for the poor pressure they experienced and that we did not attempt to thaw their service as we did the others at the start.

Going forward

We have reviewed the circumstances of the winter of 2015 and developed the attached policy to guide our actions going forward.

The main areas clarified in the policy include:

- Ownership of the components of the water service
- Methods of thawing services
- Guidelines for determining when the customer pays for thawing services and when Utilities Kingston covers the cost
- Preventative measures to avoid freezing
- When temporary services will be utilized
- User charges (water and sewer) when temporary services are utilized
- Communications, to the public and customer specific

These items are addressed in the policy, and staff will provide any additional information committee or council desires at the respective meetings.

One item of contention during the last winter was customers requesting Utilities Kingston cover the cost for plumbers that the individual homeowner contracted to thaw their service. It has not been the practice of Utilities Kingston to reimburse homeowners for expenses of contractors they have hired to perform work at the homeowners' direction. The policy as it has been presented clarifies this item.

Existing Policy/By-Law:

By-Law No. 2006-122 Water By-Law

Notice Provisions:

Not applicable.

October 13, 2015

Page 6 of 6

Accessibility Considerations:

Not applicable.

Financial Considerations:

Not applicable.

Contacts:

Jim Keech, President and CEO, Utilities Kingston, 613-546-1181, Extension 2217

Kevin Riley, Director, Water and Wastewater Operations, 613-546-1181, Extension 2224

Joe Lewis, Manager, Water and Wastewater Underground Operations, 613-546-1181, Extension 2327

Carl Doohar, Supervisor, Water and Wastewater Underground Operations, 613-546-1181, Extension 2336

Other City of Kingston Staff Consulted:

Not applicable.

Exhibits Attached:

Appendix A - Utilities Kingston Frozen Water Service Policy

WD-P-01 Frozen Water Service Policy

Revised October 1, 2015

Page 1 of 6

Purpose

The purpose of this policy is to describe the general processes and responsibilities for the restoration of drinking water supply to properties where that supply has been interrupted as a result of the water service piping freezing and to prevent future occurrences at properties previously affected.

This policy also describes the responsibilities of the municipality, drinking water system operating authority, and property owners under normal conditions and under abnormal conditions such as frozen water services.

Policy

Utilities Kingston is responsible for the operation, maintenance, and repair of the drinking water systems under its operating authority which includes all municipally owned water service piping and shut off valves within the municipal right of way under normal and frozen water service conditions.

Utilities Kingston shall take reasonable steps as described in this policy to restore the supply of water interrupted as a result of freezing as quickly as possible.

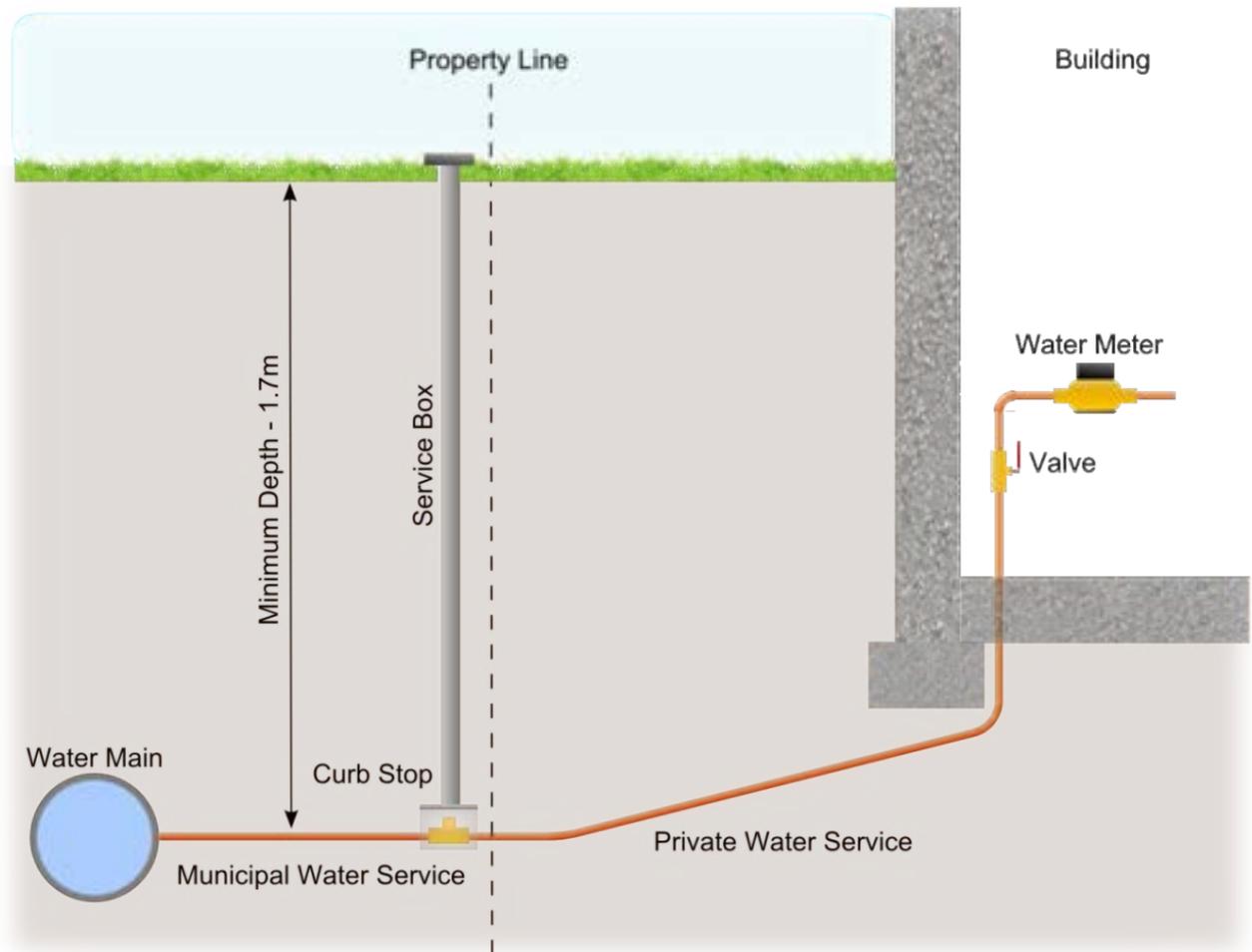
The property owner is responsible for the maintenance and repair of the drinking water services located on their property including the water shut off inside the home or building under both normal and abnormal conditions including frozen water service conditions.

Water Service Definition and Description

A water service is defined as the piping connecting a property or building to a municipal water main. A typical water service consists of municipally owned piping (water service stub per By-Law No. 2006 - 122) and privately owned piping (service extension and private watermain per By-Law No. 2006 - 122). The pipe from the water main connection to the property line is owned by the municipality. The service shut off valve (curb stop) which is typically located at the property line is considered part of the municipally owned piping. All piping located on private property, excepting the municipally owned water meter, is owned by the property owner.

Figure 1 provides a graphic representation of a typical water service.

Figure 1 – Typical Water Service



Conditions That Can Cause Water Services to Freeze

Water services typically freeze due to extended periods of extremely cold weather which forces frost penetration deep into the ground. If a water service has minimal soil cover over it, the frost could surround the service and freeze the pipe and the water in it. If there is no flow or very low flow in the pipe the freezing process could happen very quickly and expand along the water service pipe with time. Water services very often freeze inside the home where the water pipe touches or runs close to exposed walls with no insulation such as in crawl spaces.

Restoring the Supply of Water

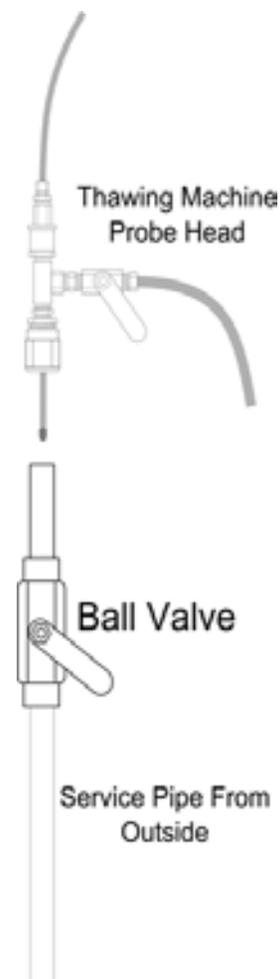
Thawing Frozen Services

By-Law No. 2006 - 122 Section 6.8 Responsibility for frozen pipes - City - Owner – “Thawing out frozen water service stubs shall be the City's responsibility. Thawing out a frozen water service or private watermains shall be the Owner's responsibility. Where any employee of the City assists the Owner in the thawing of frozen pipes on the Owner's property, all such assistance work will be considered to be at the Owner's risk, and the Owner shall have no claim against the City by reason of such work.”

Thawing of frozen water services will be completed in the order of calls received; however, priority may be given to hospitals and health care facilities, residents with special health needs, schools and daycares, and properties that cannot be supplied through a temporary service connection.

The Owner will be responsible for securing the services of and paying for a licensed plumber to complete any plumbing modifications necessary to facilitate thawing of a frozen water service and to complete the reconnection of internal piping after the completion of the thawing process. Utilities Kingston should be consulted prior to having any plumbing modifications made to ensure those modifications will meet the requirements for the thawing equipment that will be used. Typically, a full flow through ball valve connected to the underground service piping where it enters the building and a short length of copper pipe connected to the downstream side of the ball valve is required to facilitate the use of service line thawing equipment as shown in Figure 2.

Figure 2 – Typical Valve Installation for Thawing Machine Use



Note – Valve installation requirements may vary.

Responsibility for Costs of Thawing Services

The owner will be responsible for all costs incurred by Utilities Kingston to thaw a water service line where it is determined, by Utilities Kingston, that only the private service piping was frozen or where it is determined that the freezing of the water service originated within the privately owned piping. The owner will not be responsible for costs incurred by Utilities Kingston where it is determined that only municipal service piping was frozen or where it is determined that the freezing of the water service originated within the municipally owned piping.

Where a Property Owner or Occupant attempts to thaw a frozen water service on their own, or through the use of a contractor that is not under the direction of Utilities Kingston, the Owner or Occupant, as applicable, will be responsible for all associated costs.

Temporary Service Connections

At Utilities Kingston's discretion and where deemed practical, the completion of a temporary water service connection may be made to restore the supply of water. The decision to make a temporary service connection will be based on the availability of personnel and equipment to thaw the service within a reasonable time frame and the availability of a suitable water connection adjacent to the affected property.

Where a temporary service connection is drawing water from a neighboring property, Utilities Kingston will remove, or render inoperative, the water meter from the property supplying the water. Billing for water and sewer services for both the property providing the temporary water supply and the property receiving the temporary water supply will be based on a fixed flat rate charge until the temporary water service has been removed and normal service conditions are restored.

Maintaining the Restored Supply of Water

After the supply of water has been restored, by thawing or temporary water service connection, the Owner, as per Utilities Kingston's instructions, shall be responsible for maintaining a constant flow of water through the water service or temporary service connection. Where a service re-freezes or a temporary service connection freezes as a result of the Owner failing to maintain the constant water flow, then the Owner will be responsible for all subsequent costs to restore the supply of water.

Where a frozen water service has been thawed and the occupant has been advised to maintain a constant flow of water, Utilities Kingston will remove, or render inoperative, the water meter from that property. Billing for water and sewer services will be based on a fixed flat rate charge until Utilities Kingston advises the occupant to discontinue the constant flow of water and reinstates operation of the water meter.

Preventing Water Services from Freezing

Utilities Kingston

Where it has been identified that freezing resulted due to municipally owned service piping that is not buried to the current standard minimum depth, work to address these issues by lowering and/or insulating service piping will be completed as resources and work priorities allow.

Utilities Kingston will monitor current conditions to determine if and when running water continuously should be implemented to prevent services from freezing. Factors to be considered include prolonged periods of extreme cold, observed frost depth, treated water temperature measurements, and reported frozen services.

If the determination is made that running water continuously will be implemented, Utilities Kingston will take reasonable steps to contact the Owners or Occupants of the properties identified as having previously frozen only on municipal service piping or where it was determined that the freezing of the water service originated within the municipally owned piping or where a determination of location was not made to advise that they begin to run water continuously.

In addition to general public communications about preventing water services from freezing, Utilities Kingston may advise the Owners or Occupants of properties that are known to have previously frozen only on private service piping or where it was determined that the freezing of the water service originated within the privately owned piping that they should begin to run water continuously to prevent freezing.

Property Owners

By-Law No. 2006 - 122 Section 6.5 Responsibility for protection, water loss, damage – “All water service to and including the water meter shall be properly protected from frost and any other damage at the expense and risk of the Owner of the property being serviced. ...”

By-Law No. 2006 - 122 Section 6.6 Responsibility - vacant and unheated premises – “When any premises is left vacant or without heat it is the Owner's responsibility to shut off the water supply from within the premises and to drain the piping therein. The Owner shall request that the Operating Authority have the water shut-off valve turned off to stop the water supply. The valve will be turned on only at the Owner's request and in the Owner's presence. The Owner shall pay for this service at the rate as indicated in the Water and Wastewater Rates and Miscellaneous Charges By-Law” (Utilities Kingston Master Service Fee Schedule).

WD-P-01 Frozen Water Service Policy Page 6 of 6

Where a service has previously frozen only on private service piping or where it was determined that the freezing of the water service originated within the privately owned piping the Owner should take appropriate measures to prevent future freezing occurrences such as lowering and/or insulating shallow service piping and ensuring that all internal plumbing is within the heated building space. If appropriate work is not completed to prevent the service from freezing, then when conditions indicate, or Utilities Kingston advises, that continuous running of water be implemented to prevent freezing the Owner should ensure that enough water is being continuously run to prevent freezing. Utilities Kingston may provide advice or assist in setting an advisable flow rate but will not be responsible for the cost of any water use or any other costs should the service freeze.

Where a service has previously frozen only on municipal service piping or where it was determined that the freezing of the water service originated within the municipally owned piping or where a determination of location was not made and Utilities Kingston has given advice on continuously running water to prevent freezing the Owner must ensure that the water is continuously run as advised.

Communications

To lessen the impact of service disruptions during utility emergencies, it is important that customers have access to timely and reliable information that describes how they can protect their properties. Utilities Kingston will develop and maintain a proactive communications plan that will include a public education component (how to protect your property). In addition, communications will provide accurate information describing how Utilities Kingston manages the situation and about home owner responsibilities. Communications tactics will include personal (direct) approaches and be integrated across multiple online and offline channels.

Approval

This policy was approved on