

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY:



Carl D. Yates, General Manager, Halifax Water

DATE: September 11, 2007

SUBJECT: Dunbrack Street / Kearney Lake Road Water Transmission Main

INFORMATION REPORT

ORIGIN

The 48" dia. transmission main break, August 7, 2007, Kearney Lake Road. HRM Council information request of September 4, 2007.

BACKGROUND

The Pockwock water system is fed by a network of concrete pressure pipe transmission mains of 60, 54, 48, and 36 inch dia. from the treatment plant to the control chamber at Main Avenue and onward to various distribution storage reservoirs.

On December 26, 2003, Halifax Water experienced a failure on the lower section of the 48" dia. transmission main, approximately 500 metres southeast of the intersection of Dunbrack Street and Kearney Lake Road.

On August 7, 2007 we experienced a second failure on this lower section of main just north of the Dunbrack Street and Kearney Lake Road intersection.

DISCUSSION

The following provides a summary of the historical management of this transmission main, the effective response to the recent failure and our accelerated approach to the future mitigation of problems on this system.

Transmission Main Management

This transmission main has been problematic due to localized external driven corrosion of the prestressing wires that form a core structural component of the pipe. This corrosion can result from a combination of aggressive soils, chlorides in the ground water, and/or cracks in the concrete cover cost.

As a result of the first break in December 2003, Halifax Water retained the Pressure Pipe Inspection Company (PPIC) to conduct an inspection of the pipe. This company uses a technology referred to as Remote Field Eddy Current/Transformer Coupling Technology. The inspection took place on September 26, 2005, and determined that 56 pipes in the Dunbrack Street main displayed evidence of wire breaks.

Following the inspection, Halifax Water retained Mehdi Zarghamee of Simpson Gumpertz & Heger Inc. (SGH), located in Boston. Mr. Zarghamee is one of a small number of experts in the management of this type of pipe in North America. Mr. Zarghamee analyzed the PPIC inspection data and correlated the number of wire breaks with the pipe operating pressure, and came up with a recommended replacement and maintenance strategy. The SGH strategy suggested replacing approximately eight (8) sections of pipe (individual 20 foot lengths) over a four year period while Halifax Water works on a rehabilitation or replacement solution for the balance of the main. The four (4) highest priority sections were replaced in the fall of 2006. Plans were in place for continued rehabilitation in 2007 in accordance with our risk management strategy.

In conjunction with the above rehabilitation activity, Halifax Water Operations staff have performed thorough leak detection on a bi-weekly basis along this transmission main. This creates an opportunity for early identification of failure activity that may precede a larger failure. This activity has located several potential failures within other mains in our system, and is an important part of our ongoing management plan.

August 2007 Failure

Prior to beginning the 2007 rehabilitation work the August 7th failure occurred. The following is a brief chronology of the events that comprised the swift and effective response to this incident:

- Failure occurred in pipeline at 11:51 pm on Tuesday August 7, 2007.
- Break immediately detected by staff at JD Kline Water Treatment Plant (WTP)
- Low Pressure alarms generated automatic calls to operations staff
- Control valves begin automatic closing
- WTP staff call 911 for Police and Fire assistance
- First staff on site at 12:25 am, and site secured with help of Fire and Police
- Flow is controlled by 12:35 am
- Repair began at 6 am on August 8, 2007
- 80 feet of new Ductile Iron pipe installed by 2 pm on August 9, 2007
- System back in service by 3 pm on August 10, 2007
- Paving complete and street re-opened by 8 pm on August 10, 2007

Chlorine residuals and total coliform testing was repeated upstream and downstream of the site to confirm that there was no impact on water quality. Some discolouration occurred but residents were advised that the water was safe. Some property damage occurred to public and private property within the adjacent neighbourhood, and Halifax Water staff worked to help mitigate the damage.

Future Plan

As a result of the second failure on this section, Halifax Water has determined that it should replace the section of pipe from Broadholme Avenue to Ross Street, a distance of approximately 1.4 km. This requires a design to be completed, as well as construction of a Booster Pumping Station to allow Halifax to be supplied while the 48" dia. main is out of service. After the repairs associated with the August 7 event, there remains one high risk piece of pipe in this section that has yet to be replaced. Plans are being made to replace this piece of pipe in the fall of 2007. It is anticipated that the first phase of the replacement work will go to tender in the spring of 2008, subject to the approval of the Halifax Water Board and the Nova Scotia Utility and Review Board.

BUDGET IMPLICATIONS

The cost of the proposed replacement will be incorporated in the 2008/2009 Halifax Water Capital Budget which will be presented to the Halifax Water Board in the new year.

ATTACHMENTS

None

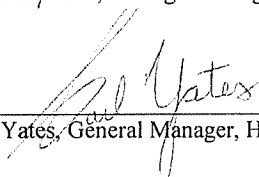
A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/agenda.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

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