

<i>The Town of Fort Frances</i>	SECTION OPERATIONS AND FACILITIES
Standard Operating Procedure for Flushing of Water Mains	REVISED July 2004
<u>POLICY</u>	
Resolution No. 305 07/26	Supercedes Resolution No.
Policy Number 4.8	PAGE 1 of 2

1. PURPOSE:

To provide a procedure which outlines the events and responsibilities of Town employees for flushing of water mains.

2. RESPONSIBILITY:

All individuals in the Operations & Facilities Division workforce, at all levels and functions, are responsible for understanding and carrying out the responsibilities and duties outlined in the policy.

3. PROCEDURE:

A. GENERAL:

- i. Flushing of the water mains is done initially to remove any debris or dirt left in the pipe after installation. After installation is completed, the distribution system should be maintained by flushing at a minimum frequency of once per year.
- ii. Swabbing may be required if the integrity of the distribution system cannot be maintained by flushing.
- iii. Notify the Water Treatment Plant Operator(s) of which water mains will be flushed.

B. GUIDELINE:

- i. Pre-plan an entire day's flushing using the available distribution system maps. Traffic control and warning devices are to be used where traffic is being affected.
- ii. Determine which sections of the mains are to be flushed at one time, the valves to be used and the order, which the pipelines will be flushed.
- iii. Notify all costumers who will be affected of the dates and times of the flushing through billings, newspaper, local radio or T.V. announcements. Explain the intent and objective of the flushing program.
- iv. Start at or near a source of supply and work outward into the distribution system.
- v. Assure that an adequate amount of flushing water is available at sufficiently high pressures. A minimum flushing velocity of 0.75 m/sec (1.50 m/sec preferred) or

2.5fps (5.0 fps preferred) should be used. One or more fire hydrants may be used for flushing so that minimum velocities can be obtained. Please see the chart below for pipe diameter and number of hydrants required to flush effectively.

- vi. Isolate the section to be flushed from the rest of the system. Close the valves slowly to prevent water hammer.
- vii. Open the fire hydrant or blow-off valve slowly.
- viii. Direct flushing water away from traffic, pedestrians and private property. Avoid erosion damage to streets, lawns and yards by the use of tarpaulins and lead-off discharge devices such as diffusers. Avoid flooding, which can cause traffic problems.
- ix. Open hydrant fully for a period long enough (5-10 minutes) to stir up the deposits inside the water main. Assure that the system pressures in nearby areas do not drop below 138 kPa (20 psi).
- x. Record all pertinent data regarding the flushing operation as well as a description of the appearance and odour of the water flushed.
- xi. Collect two (2) water samples from each flowing hydrant, one in the beginning (about 2 to 3 minutes after the hydrant is opened) and the second sample when the discoloured water turns clear (just before closing the hydrant). After the flushing water becomes clear test the free chlorine residuals to ensure they are at the 0.2 mg/L range with the minimum being 0.05 mg/L and record this information on the Hydrant Maintenance Report. Slowly close the hydrant or blow-off valves.
- xii. After one section of pipe has been flushed, move on to the next section to be flushed and repeat the same procedures.
- xiii. Prepare a record of inspection and maintenance operations and any repair work to be done. (See Appendix A; Water Main Flushing Report).

A record of the hydrant performance should be kept on an individual basis and records maintained in GIS.

Pipe Diameter (Minimum)		Required Flow Rate*		No. of Hydrants Required
Inches Open**	Millimetres	GPM	L/S	
4	100	100	6	1
6	150	200	13	1
8	200	400	25	1
10	250	600	38	1
12	300	900	57	2
16	400	1600	100	2

*Based on 0.75 m/s (2.5 ft/s) at 280 kPa (40 psi) pressure

**Based on hydrant with one 63 mm (2 1/2 in.) outlet.

Coordinate with flushing aspects of “Hydrant Maintenance” program.