

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, FEBRUARY 19, 2020**

SUBJECT **Revisions to the Uni-Directional Water Distribution Main Flushing Program Schedule**

ISSUE SUMMARY

Revisions to the uni-directional water distribution main flushing program schedule are required to improve overall efficiency and effectiveness of the program. This issue relates to the Capital Regional District (Regional) Water Conservation Bylaw.

BACKGROUND

The Capital Regional District (CRD) operates the Juan de Fuca Water Distribution System and carries out a specifically designed flushing program as part of the regular system maintenance. The uni-directional flushing program (UDFP) was approved by the Juan de Fuca Water Distribution Commission in 1996 with the purpose of removing fine sediments from the system that may lead to water quality deterioration. This program is considered one of the key barriers to drinking water quality deterioration in the multi-barrier approach that the CRD practices. Other municipal water distributors in Greater Victoria also conduct system flushing. In its current form, this UDFP achieves an effective flushing rate of 50% of all water distribution mains per year. Initially, the UDFP achieved 100% of the system per year but system growth, flushing 'downtime' during winter months due to weather, and increasing infrastructure maintenance demands have necessitated this reduction over time. The UDFP is supplemented by approximately 50 sites that are flushed individually on a monthly frequency to address localized water quality concerns.

The UDFP has historically been conducted between October 1 and April 30. This has been to align with the principles of the Outdoor Water Use Restrictions under Stage 1 in the CRD Water Conservation Bylaw, which are in place from May 1 to September 30 each year. This adherence to the Outdoor Water Use Restrictions is strictly voluntary, as the bylaw does not restrict municipal water main flushing.

ALTERNATIVES

Alternative 1

The Regional Water Supply Commission endorses the practice of water distribution system uni-directional flushing within the period of September 1 to June 30, and directs staff to advise municipal water distributors accordingly.

Alternative 2

The Regional Water Supply Commission directs staff to maintain the current practice of water distribution system uni-directional flushing within the period of October 1 to April 30, and to advise municipal distributors accordingly.

Alternative 3

The Regional Water Supply Commission refer the report back to staff for further information.

IMPLICATIONS

Water Quality Implications

The UDFP ensures the removal of organic material from the distribution system. A failure to remove sufficient organic load would not only lead to an undesired accumulation of sediments in the piping network with impact on filters, strainers and customer taps, but would also facilitate growth of undesired microorganisms and therefore jeopardize the potability and aesthetics of the drinking water. Extending the flushing into the summer shoulder months would also assist in removing growth buildup during the warmer periods of the year.

Water Demand Implications

The UDFP has been limited to the months outside the Stage 1 Outdoor Water Use Restrictions. One of the reasons is to remove the perception that the CRD is using water for maintenance during a period when the source water reservoir levels are dropping and when water conservation measures are in place. Staff conservatively estimate that all municipal water suppliers in the Greater Victoria Drinking Water System have an annual water use of 414,000 m³ for water main flushing. This constitutes less than 1% of the total regional water consumption per year. Changes to the regional flushing program may also lead other local governments to amend their flushing programs and CRD staff would work with these water suppliers to coordinate public outreach, as well as any operational considerations. An information or outreach campaign could offset any concerns for negative public perception and it would be a good opportunity to discuss the CRD's overall strategic management plan. As well, summer flushing during any extreme drought years would temporarily be suspended. Staff will also ensure flushing does not occur during daily peak use periods and investigate other supply management efforts (e.g., reviewing reservoir filling times).

Operational Implications

The current UDFP involves two crews of three operators per crew for the four to five months per year in which weather permits flushing between October 1 and April 30. The benefits of flushing over an expanded schedule from September 1 to June 30 include improved employee health and safety, operational efficiency (e.g., more flexibility in allocating staff and equipment to this program and other specific tasks), a reduced number of spot flushings, and environmental benefits (e.g., reduced intensive discharge of water during periods of high soil saturation).

CONCLUSION

The uni-directional water main flushing program is an integral component of the overall operation and maintenance programs and is significant in ensuring maximal water quality throughout the system. The current temporal restrictions do not allow staff to maximize the efficiency and effectiveness of the flushing program. Staff propose that the period for the flushing program be extended to September 1 to June 30. This will lead to improvements in operational efficiency, as well as improve drinking water quality.

RECOMMENDATION

The Regional Water Supply Commission endorses the practice of water distribution system uni-directional flushing within the period of September 1 to June 30, and directs staff to advise municipal water distributors accordingly.

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