

Power washing our

PIPES

When Richmond residents turn on their taps, they're getting clean, fresh, world class water thanks in large part to the efforts of City workers who power wash the pipes using a practice called unidirectional flushing.

WHAT IS UNIDIRECTIONAL FLUSHING?

- Unidirectional flushing is a best practice used by local governments as part of regular maintenance to "power wash" pipes by forcing water in a single direction through a specific route by closing or opening valves in a strategic way.
- Forcing the water in a single direction increases the velocity of the water flow and ensures that the insides of the pipes are being scoured while the water is safely flushed out of the watermain network.
- The water is then drained through hydrants at the end of the flushing sequence to remove the debris from the system.
- Cleaning pipes is important because it prevents bacterial growth and removes sediment – the tiny solids that occur naturally in water and gradually build up on the bottom of the watermain.
- Staff control the flow of water during flushing. When practical, the water that is flushed is captured to be reused for irrigation.

THE SHORT
EXPLANATION FOR
UNIDIRECTIONAL
FLUSHING:

A LOT OF
WATER AND A
LOT OF PRESSURE
EQUALS CLEAN
PIPES AND
SAFE DRINKING
WATER.





Annual watermain flushing enhances drinking water quality.

But it's even more complex than that, says Todd Smithers, a supervisor in Richmond's Water Services, Hydrant and Valves Division, who explains that scheduling and conducting the work must take into account safety for workers, road users and residents as well as potential disruption for homes and businesses while addressing the overarching issue: water quality.

And it's no small job, since [Richmond has more than 600 km of watermains that deliver more than 30 million cubic metres of water to customers each year.](#)

The work is done once a year at night to minimize disruption, explains Smithers, a City employee since 1997, with crews working 10-hour shifts. The target is for each crew member to cover two kilometres per shift, and they typically leapfrog one another, moving from hydrant to hydrant along the specified route as clean water at pressures up to 80 pounds per square inch (PSI) pushes out contaminants such as biofilm and organic matter. They flush the water across roads and into ditches, and diffusers are used to mitigate the pressure while temporary berms can be used to protect properties.

It takes between five and eight weeks to complete, and throughout this process, water at each hydrant is tested for cleanliness and turbidity (that refers to suspended particles in the water, which result in cloudy water) before and after each flush to ensure the end users – residents, businesses, institutions – get the safest possible water.

"We always have a good source of high-quality water from Metro Vancouver, and we're constantly flushing the pipes to help maintain that water quality for our residents so they don't have to worry about it," says Derek Gardner, another veteran of Richmond's water staff. "Our whole department, we take pride in that."

He also notes the steps taken to protect workers and the public while the work is underway, from lights to traffic control. "It's safety first all the time."

Hydrant mechanic Dylan McQuistin, who has been with the City for eight years, says many water customers don't understand what crews are doing late at night. "Some people think we're wasting water but the reality is, we're cleaning out the entire pipe. It ends up in a huge water quality improvement in the long run."

It makes financial sense, too, says Smithers. If sediment is allowed to build up in pipes, it would decrease capacity, resulting in the need to upsize the pipes more often, and could also cause the pipes to deteriorate more quickly. "Without flushing, our mains wouldn't last as long," he says. "So, not only is it ensuring the mains last longer, by doing this maintenance, the water quality is extremely high. And it keeps all of that debris from showing up in tap water."

"It's money well spent. The numbers don't lie. We know how good our system is with all the testing we do."

And it's a group effort, says Carly Smith, a 19-year Richmond employee. "It takes

a lot of leadership and just being a team. Our crews thrive on working together, and it makes everything go smoother. It helps us cover more ground."

Deborah Prystay, Richmond Water Services Project Manager, echoes Smith's comments and applauds the work of water crews.

"They're a very dedicated crew, and they are passionate about what we do in Water Services," she says. "By working through the night, they not only ensure we have high-quality drinking water, they also help to minimize impacts on our residents."

Adds Prystay: "They understand the importance of the program and the water we deliver to Richmond residents."

The end result of late nights, teams working together and the power of water at high velocity is a network of clean pipes that deliver safe, reliable and high-quality drinking water to Richmond residents.

