



Within the City's pipe distribution system, the City monitors for such things as bacteria and turbidity (cloudiness) as well as chemical and physical parameters unique to distribution systems. Regular monitoring takes place at 49 water-sampling sites located strategically across the City's water distribution system. Weekly samples are collected by both City and Metro Vancouver staff, with temperature, turbidity, chlorine residual, and bacterial analysis carried out at the Metro Vancouver testing laboratory in Burnaby.

Bacterial contamination (e-coli coliforms) was found in none of the 2,144 water samples analyzed in 2007, and none of the samples indicated a higher than acceptable total coliform count as stipulated in the Canadian and B.C. Drinking Water Standards. Audit samples taken by the Fraser Health Authority confirmed Metro Vancouver laboratory test results.

Portions of the City's distribution system continue to occasionally experience low residual chlorine levels. The extent of this condition improved in 2007 compared to 2006, and the low residual continues to have no impact on the measured coliform counts. Metro Vancouver and the Fraser Health Authority staff review this on an ongoing basis and have no concerns at this time.

Where weekly sampling test results revealed (through the use of heterotrophic plate counts, HPC) the potential for bacterial growth beyond acceptable limits, the City's maintenance crews flushed the mains in the affected areas to ensure the levels stay within acceptable standard. Low chlorine residuals, low flow demands, and the absence of circulation at or near dead-ends in the system are characteristics of areas where elevated HPCs may re-occur and result in increased flushing frequency. When practical, City staff is actively trying to eliminate dead-end water mains by completing "loops" in the water main system.

Water samples met Metro Vancouver testing laboratory's detection limits for compliance with the Guidelines for Canadian Drinking Water Quality Standards, and the distribution of water to our customers complied with the British Columbia Drinking Water Protection Regulation.

## **CONCLUSION**

The City of Surrey remains diligent and proactive in monitoring the water system and in the maintenance and operation of the City's water distribution system to ensure that the City's water customers continue to receive safe, clean and clear drinking water.

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Appendix 1: Summary - 2007 Water System Quality Annual Report

**REPORT SUMMARY****2007 Water System Quality Annual Report**

In 2007, the City of Surrey purchased all its water from the Metro Vancouver (GVRD). The City of Surrey's water distribution system begins at the discharge points of 6 Metro Vancouver local reservoirs and 11 Metro Vancouver connection chambers located throughout the City.

The City's piped distribution system is approximately 1,770 km long and includes 10 pump stations. Surrey's geography and size has required the configuration of eight (8) different water pressure zones to be employed throughout the system.

Key to monitoring the City's water quality are forty-nine (49) water-sampling sites located strategically across the City. Weekly samples are collected by both City and Metro Vancouver staff, with temperature, turbidity, chlorine residual, and bacterial analysis carried out at Metro Vancouver testing laboratory in Burnaby.

The City's scheduled maintenance program for its water system components includes a unidirectional water main flushing program. This program ensures all pipes are flushed at least once every three (3) years, ensuring that water from non-flushed mains does not flow into recently flushed mains. The combination of the City's maintenance program, ongoing pipe size upgrades, and water supply control by Metro Vancouver has so far eliminated the need for any abrasive, mechanical cleaning of the City's distribution mains.

Approximately 22% of the City's Water Operating & Maintenance Budget was spent on water quality-related work in 2007. In all 2,144 water samples were analyzed, and there were no samples that detected the presence of e-coli coliforms. All samples met Metro Vancouver testing laboratory's detection limit for compliance with the B.C. Drinking Water Protection Regulation (BCDWPR) and the Guidelines for Canadian Drinking Water Quality (GCDWQ) standards for counts of total coliforms. Audit samples taken in 2007 by the Fraser Health Authority throughout the system confirmed Metro Vancouver lab test results.

The City has established response procedures to deal with water quality issues and for water main line breaks. The procedures incorporate both agency notification and physical repair steps. Integral to the response procedures are well-defined communication links between the City, Metro Vancouver, and the Fraser Health Authority (FHA). Development of a response plan for major water emergencies is ongoing and was successfully tested, in concert with other Metro Vancouver members, in November 2007. Further testing is scheduled in 2008.

As in previous years, portions of the distribution system have experienced lower than desirable chlorine residual values; however, the extent of this condition continued to improve in 2007. The City is continuing to closely monitor the chlorine residual values trend, and will be reviewing our findings with the FHA.

Where weekly water sampling test results revealed (through the use of heterotrophic plate counts, HPC) bacterial growth within the mains, in excess of 500 colony forming units per milliliter, the City's maintenance crews flushed the mains in the affected areas and remonitored the chlorine residuals at the sampling station. Low chlorine residuals, low flow demands, and

circulation restrictions at or near dead-ends in the system, are indicative of site characteristics where elevated HPC's reoccur.

Metro Vancouver laboratory performs quarterly tests on the City's water system for disinfection by-products (Haloacetic Acids and Trihalomethanes), and semi-annual tests for pH and select metal concentrations. These were carried out at representative sampling sites in accordance with a monitoring and reporting plan established between the City and Metro Vancouver. The test results did not exceed the minimal acceptable levels recommended in the GCDWQ.

Except for the occasional unauthorized opening of fire hydrants, there were no incidents of vandalism in 2007. System security components incorporating lighting, locks and alarms at the water pump stations, as well as check valves on service connections, help provide protection against vandalism.

The City of Surrey remains diligent in ensuring that the water distribution system is maintained to the high standards expected by its 111,500 water customers.