

strategically across the City. Weekly samples are collected by both City and GVRD staff, with temperature, turbidity, chlorine residual, and bacterial analysis carried out at the GVRD testing laboratory in Burnaby.

None of the over 2,200 water samples analyzed in 2006 detected the presence of bacterial contamination (fecal coliforms) above the GVRD's minimum detection limits, and none of the samples indicated a higher than acceptable total coliform count. Audit samples taken by the Fraser Health Authority confirmed the GVRD laboratory test results.

Heavy rains in November 2006 impacting GVRD reservoirs resulted in elevated turbidity readings at the City's water sampling sites. However, the magnitude of the elevated turbidity did not affect the bacteriological quality of the City's water.

Portions of the City's distribution system continue to occasionally experience low residual chlorine levels. The extent of this condition improved in 2006 compared to 2005, and the low residual continues to not have any measured impact on the coliform counts. The impact of this situation is reviewed with the GVRD and the Fraser Health Authority on an ongoing basis.

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. 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 HPC's may reoccur.

Other than the above noted exceptions, the water samples met the GVRD testing laboratory's detection limit 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 to maintain and operate the water distribution system to a high standard to ensure we deliver the safe, clean and clear drinking water that our customers expect.

Paul Ham, P.Eng.
General Manager, Engineering

GMc/RNA:ajs/rdd

Appendix 1: Summary - 2006 Water System Quality Annual Report

REPORT SUMMARY

2006 Water System Quality Annual Report

In 2006, the City of Surrey, similar to other jurisdictions in the Lower Mainland, purchased all its water from the Greater Vancouver Regional District (GVRD). The City of Surrey's water distribution system begins at the discharge points of 6 GVRD reservoirs and 11 GVRD connection chambers located throughout the City.

The City's piped distribution system is approximately 1,770 km long and includes 11 pump stations.

Surrey's geography and size has required the configuration of eight (8) different water pressure zones to be employed.

An average annual water main system growth rate of 2% has occurred since 1997 and a 3% increase is forecasted for 2007. The City's piped distribution system grew by approximately 28 km in 2006, and a similar increase is projected for 2007.

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, and is designed so 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 the GVRD, has so far eliminated the need for any abrasive, mechanical cleaning of the City's distribution mains.

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 GVRD staff, with temperature, turbidity, chlorine residual, and bacterial analysis carried-out at the GVRD testing laboratory in Burnaby.

Approximately one-fourth of the City's Water Operating & Maintenance Budget was spent on water quality related work in 2006. Over 2,200 water samples were analyzed, and there were no samples that detected the presence of fecal coliforms above the minimum detection limits of the GVRD laboratory. All samples met the GVRD 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 and fecal coliforms. Audit samples taken in 2006 by the Fraser Health Authority throughout the system, confirmed the GVRD lab test results.

Heavy rainfall in the GVRD reservoir watersheds in November 2006 resulted in elevated turbidity readings at the City's water sampling sites and a boil water advisory for one day. The elevated turbidity was greater than the maximum limits recommended by the GCDWQ. However, the elevated turbidity was mostly undetectable to the human eye, and did not affect the bacteriological quality of the City's water.

The City has established response procedures to deal with water quality issues and for 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, the GVRD, and the Fraser Health Authority (FHA). Development of a response plan for major water emergencies is ongoing and is scheduled for testing in 2007.

As in previous years, portions of the distribution system have experienced lower than desirable chlorine residual values. The extent of this condition improved in 2006 over 2005, and resulted in values similar to those of 2004. The City is continuing to closely monitor the chlorine and 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.

The GVRD performs independent 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 the GVRD. The test results did not exceed the minimal acceptable levels recommended in the Guideline for Canadian Drinking Water Quality (GCDWQ).

Except for the occasional unauthorized opening of fire hydrants, there were no incidents of vandalism in 2006. 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 110,700 customers, and 424,000 residents.