Burrard Inlet - False Creek
WATER QUALITY OBJECTIVES AMENDMENT REVIEW
TECHNICAL REPORT SUMMARY
Ministry of Environment,
Environmental Quality Section

This report presents the results of a review conducted in order to determine whether water quality objectives aimed at protecting recreational use should be set for False Creek.

Presented in the report are the results of a recreational users' survey, an assessment of False Creek microbiological water quality data, and a review of recreational water quality guidelines from multiple jurisdictions. The report also provides recommendations for microbiological objectives for False Creek.

Recreational Survey
A survey was distributed in order to gather information about recreation in and around False Creek. Water-based activities reported were mostly of a secondary-contact nature (water contact was incidental and often did not involve complete submersion). Respondents reported that their recreational usage varied little by season and that their activities were not deterred by rainfall.

Microbiological Data Assessment
Microbiological contamination is often the most likely impact to recreational users from water pollution since the ingestion of even small amounts of such contaminated water can cause serious illness.

Microbiological data collected between 1990 and 2002 were assessed. The following trends were observed in the data:

- Microbiological indicators (both fecal coliform and enterococci) consistently increased in concentration along the inlet from west to east. The highest concentrations of fecal coliforms were in the early and mid 1990's.
- On an annual basis, data from the more westerly sites were found to have significantly higher coliform concentrations in the winter months than the summer months. At the eastern sites there was no significant difference in concentrations between seasons.
- Bacteriological concentrations tended to be lowest in early spring, followed by a gradual increase through the summer, with peaks in the fall and winter months.
- Potential relationships between the microbiological data and other factors such as precipitation, salinity levels, and combined sewer overflows were explored. None of these factors were found to be well enough correlated with the data to be used as predictors of microbial concentrations.
- There were periods of elevated microbial concentrations that did not appear to be related to any of the factors examined such as combined sewer overflows, or precipitation.

Guideline Review
Guidelines from different jurisdictions (B.C. Ministry of Environment (MoE), Canadian Council of the Ministers of the Environment (CCME), Canada Health and Welfare, US Environmental

Protection Agency (EPA) and World Health Organization (WHO)) were reviewed.

While the table below outlines some differences, all of these agencies:

- recommend the use of enterococci as an indicator in marine recreational waters, and
- derived their numeric guidelines from the same epidemiological studies.

Agency	Risk Level	Primary Contact GM †	Secondary Contact GM †	Primary Contact SSM *	Secondary Contact SSM *
US EPA[1] (2002)	0.8	4	20	63	315
US EPA (2002)	1.4	14	70	195	980
B.C. MoE[2]	1.6	20	100	284	1420
CCME[3]	1.9	35	n/a	70	n/a
US EPA (1986)	1.9	35	175	501	2505

[1] EPA – Environmental Protection Agency
[2] MoE – Ministry of Environment
[3] CCME – Canadian Council for Ministers of the Environment
† GM - geometric mean
* SSM - single sample maximum

The WHO combines the numeric data from water quality sampling with information from a sanitary survey in order to derive a classification for the waterbody. These classifications then have specific management options which apply.

Attainment with Guidelines

Attainment with the proposed B.C. MoE secondary-contact guidelines for enterococci ranged from 53% at some of the eastern sites up to 100% at most of the more western sites. Attainment with the EPA's 2002 guidelines was lower than this (28% to 100%). Under the WHO ranking procedure, various False Creek sites were ranked poor to very poor for recreational water quality.

Recommendations

It is recommended that secondary-contact recreational use become an official protected water use in False Creek with enterococci as the measured indicator.

A water quality objective of 100 enterococci per 100 mL (geometric mean of five samples collected in 30 days) and a single sample maximum of 1420 enterococci per 100 mL are recommended.

B.C. MoE approval of such recommendations will be deferred until the new Canadian Recreational Water Quality Guidelines are released. These are expected in 2007. The Ministry will attempt to be consistent with the national approach with respect to the guideline values as well as the guideline parameter.

Other Actions

Under the Greater Vancouver Regional District's (GVRD) Liquid Waste Management Plan, the ministry required the GVRD and member municipalities to post signs at key CSO locations. This will ensure the public is aware of their presence, thus allowing them to make informed personal choices about using the area for recreational activities. These signs will be posted at CSO outfall locations in False Creek by the summer of 2006.

For further information, or to review the complete report, please go to:
Environmental Quality Section
Environmental Protection Division
Lower Mainland Region
http://wlapwww.gov.bc.ca/sry/p2/eq/index.htm