

Recreational water quality

ANNUAL MONITORING SUMMARY 2009/10



Key points

- Marine water sites complied with guideline values in 93% of all samples.
- Freshwater sites complied with guideline values in 94% of all samples.



LAKE HAYES

How we monitor water quality

Each summer between December and March, Otago Regional Council (ORC) monitors the water quality at popular marine and freshwater bathing sites. Water samples are taken once a week over the summer and tested for the concentration of indicator bacteria (*Escherichia coli* in freshwater and *Enterococci* in salty water). These bacteria, while generally not harmful themselves, indicate the presence of faecal material and disease-causing organisms.

Why we monitor water quality

Micro-organisms such as viruses, bacteria and protozoa are present in all natural water bodies. Water contaminated by faecal micro-organisms may pose a human health hazard, particularly if swallowed. Everybody can be affected but small children, the elderly and people already weakened by illness or fatigue are more likely to become ill from exposure to contaminated water.

In most cases, the health effects of exposure to contaminated water are minor and short-lived. The most common illnesses are those of the gastric-intestinal system, leading to symptoms like diarrhoea or vomiting, and infections of the eye, ear, nose and throat. However, there are other potentially more harmful diseases such as giardiasis, cryptosporidiosis, campylobacteriosis and salmonellosis. Hepatitis A can be contracted from contaminants in the water and can lead to long-term health problems.

By testing the water regularly for indicator bacteria and posting results on the ORC website, the public make more informed decisions about whether to enter the water.

Guidelines for contact recreation

Fresh and marine waters

Water quality safety is assessed and reported according to the Ministry for the Environment and Ministry of Health Microbiological Water Quality Guidelines for marine and freshwater recreational areas (also known as the guidelines for contact recreation).

The guidelines recommend a three-tier (traffic-light) management framework according to single sample results of *E. coli* (freshwater) and *Enterococci* (marine water) bacterial counts. These categories are given below:

Mode	Safe for Swimming?	Freshwater (<i>E.coli</i> /100ml)	Marine (<i>Enterococci</i> /100ml)
Surveillance/ Green	Should be very safe for swimming	No single sample greater than 260	No single sample greater than 140
Alert/Amber	Should be satisfactory for swimming	One single sample between 261 and 550	One single sample between 141 and 280
Action/Red	Could be a health-risk for swimming	One single sample greater than 550	Two consecutive single samples greater than 280

In this report, the *E. coli* results are compared to the 'action' threshold of 550 *E. coli* per 100ml of water and the *Enterococci* results are compared to the 'action' threshold of 280 *Enterococci* per 100ml of water. The higher the number of samples taken over a bathing season that comply with guidelines, the better the water quality.

Recreational shellfish gathering

The guideline for water quality is that the median faecal coliform content of samples taken over the season shall not exceed 14 faecal coliforms/100ml and not more than 10% of samples should exceed 43 faecal coliforms/100ml.

How do you know if it's safe to swim?

Before heading out, check the recreational water monitoring section of the ORC website: www.orc.govt.nz

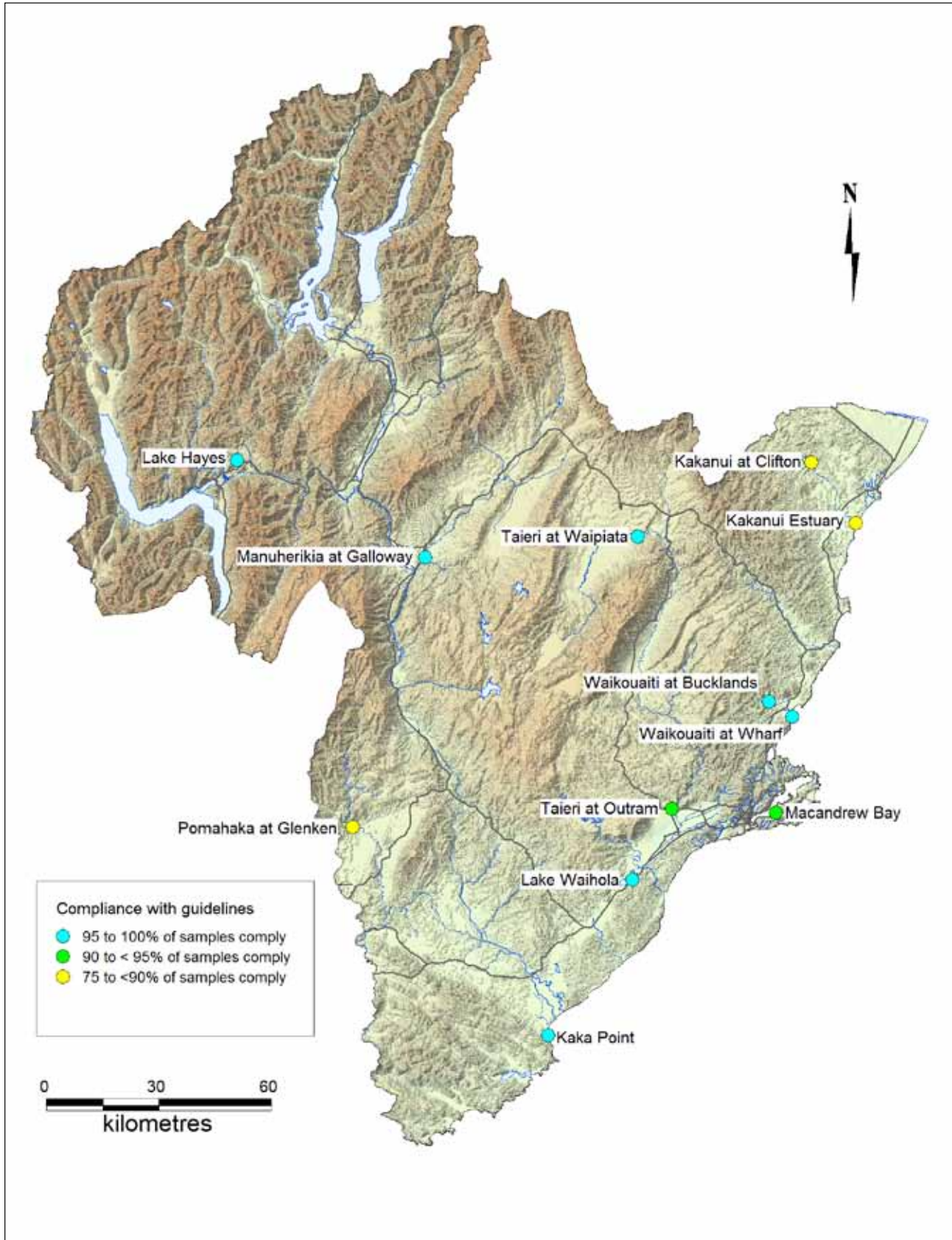
This will tell you if the water was suitable for swimming the last time it was tested and the typical water quality of the site.

Avoid swimming and collecting shellfish during heavy rain and for up to two days afterwards.

For information on the water quality of Dunedin city beaches, check out the Dunedin City Council website www.dcc.govt.nz

Sites monitored in 2009 - 2010

Twelve sites were sampled between the beginning of December 2009 and the end of March 2010. Eight of these were sampled on a weekly basis and the other four on a monthly basis. The sites and level of compliance with guideline values are detailed in the map below.





FRESHWATER INVERTEBRATES
SOURCE: STEPHEN MOORE



KAKANUI RIVER AT CLIFTON FALLS

Water quality results

Marine waters

In the summer of 2009 – 2010, estuary/marine water quality was sampled a total of 54 times. Of these, four results did not meet guideline levels. Two of these exceedences coincided with rainfall events. On 17 December sampling in the Waikouaiti Estuary coincided with a 16.5mm rainfall event, and on 12 March sampling at Macandrew Bay in Otago Harbour coincided with a 5mm rain event. The other two exceedences were not related to rainfall events (Waikouaiti Estuary on 30 March and Kakanui Estuary on 2 March). Kaka Point had 100% compliance with guideline values.

Freshwater bathing sites

There were 97 samples taken at freshwater sites and of these the MfE/MoH bathing guideline was exceeded on only six occasions. Microbiological water quality on these occasions was compromised following heavy rainfall with three of the exceedences related to heavy rainfall during the period 6 to 11 January.

The Kakanui River at Clifton Falls exceeded the guideline on three occasions. There had been significant rainfall before each of the sampling dates; 10 December (33.5mm), 12 January (8.5mm) and 10 February (6mm).

The Pomahaka River at Glenken exceeded the guideline on one occasion. This coincided with a 55mm rainfall event during which flows in the Pomahaka River increased from <4 cumecs on 8 January to >19 cumecs on the 14 January (when the sample was taken). The Taieri River at Outram exceeded the guideline on 13 January. This sample coincided with a 43mm rainfall event which increased flows from <2.5cumecs to >17 cumecs.

All the other sites maintained a high level of water quality.



Water quality for recreational shellfish gathering

In addition to the recreational bathing water sampling, the marine sites were monitored to assess their suitability for shellfish gathering. Kaka Point and the Waikouaiti Estuary complied with the guidelines. The seasonal median was less than 14 faecal coliforms/100ml and fewer than 10% of the results exceeded 43 faecal coliforms/100ml.

Macandrew Bay did not meet the guideline for recreational shellfish gathering as it had a seasonal median of 20 faecal coliforms/100ml and 27% of results exceeded 43 faecal coliforms/100ml.

Site	Median faecal coliform result/100ml	Percent of results >43/100ml
Pacific Ocean: Kaka Point	1	0
Otago Harbour: Macandrew Bay	20	27
Waikouaiti Estuary at Wharf	6	8

What do the results mean?

Recreational water quality at monitored coastal sites met the guidelines for contact recreation on 93% of sampling occasions, while those at freshwater sites met the guidelines on 94% of sampling occasions.

Recreational water quality can vary enormously depending on the weather. For example, during a wet summer (with frequent rain) more faecal matter is carried from the land into rivers and estuaries. Therefore, bacteria levels in the water during wet summers are often high when compared with dry summers. The exceedences during the summer of 2009/2010 were generally related to rainfall events.

Coastal beaches generally have lower levels of bacteria than freshwater swimming spots. This is largely because faecal matter is more rapidly diluted and dispersed by ocean currents and large volumes of water at the coast than freshwater swimming spots.



LAKE WAIHOLA

Did you know?

- Recreational water quality can be affected by effluent runoff from farmland, human wastewater discharges and stormwater outfalls
- Bacteria levels are often highest after rainfall
- Water that has been contaminated with human or animal effluent can carry a variety of disease-causing organisms, which can pose health risks to people using the water for activities such as swimming. Very young children, the elderly or people with impaired immune systems are particularly vulnerable.

More information

Further information on recreational water monitoring is available at www.orc.govt.nz under 'quick links'.



POMAHAKA RIVER AT GLENKEN

Contact

Otago Regional Council
PH: 0800 474 082
www.orc.govt.nz

