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Report to Environment Committee
from Gretchen Robertson, Surface Water Quality Scientist

Annual Coastal Water Quality Report 1999/2000

1. Purpose

To present the results of the baseline coastal water quality monitoring programme undertaken by the Wellington Regional Council during 1998/99 and the results from the territorial authorities' summer bathing beach programmes.

2. Background

The Regional Council has a number of responsibilities relating to the coastal marine area. The Resource Management Act 1991 gives Regional Councils (in conjunction with the Department of Conservation) the responsibility of controlling discharges to the coastal marine environment. The Act also requires Regional Councils to monitor the state of the environment to allow them to effectively carry out their functions. The Regional Coastal Plan gives further directives to the Council, designating certain areas of the coast to be managed for contact recreation and/or shellfish gathering purposes. To enable the Regional Council to evaluate its achievement of these policies and objectives, monitoring of the coastal water quality is undertaken.

This is the first report to present coastal water quality monitoring results from both the Western, and Wairarapa sides of the Region in a single document. For the first time the report also presents the results of the summer bathing beach monitoring programmes undertaken by the territorial authorities.

Combining the results from the Regional Council's baseline monitoring programme and the territorial authorities bathing beach programmes provides more certainty about coastal water quality around the Region and the compliance of Wellington's beaches with current contact recreation and shellfish gathering guidelines.

3. Methods

The Council's baseline coastal water quality monitoring network consists of 70 sites. Sixty-four sites are monitored by the Environment Division, and six by the Wairarapa Division.

A new set of recreational water quality guidelines were released by the Ministry for the Environment and the Ministry of Health in 1999. The guidelines state that the indicator for contact recreation is enterococci. They also specify that sampling is to be conducted at calf depth weekly over the bathing season (1st Nov-31st March) and resampling (within 24 hours) should be undertaken once an enterococci count above 136/100ml is obtained. A beach is considered unsafe for bathing and should be closed once two consecutive samples above 277 enterococci/100ml are obtained, or the running median for the season is above 35 enterococci/100ml. A concentration of 35 enterococci/100ml corresponds with a probability of 19/1000 swimmers contracting a bathing related illness.

The new guidelines also include specifications for shellfish gathering. These require faecal coliforms to be used as the indicator bacteria. The guidelines state that the median faecal coliform value for the shellfish gathering season should not exceed 14/100ml and not more than 10% of samples should exceed 43/100ml.

Faecal coliforms and enterococci are bacteriological indicators used to detect the presence of faecal contaminants within water samples. They are not pathogens themselves so they will not necessarily cause illness in humans. However, the presence of these bacteria within water samples will generally indicate the presence of pathogens.

The Regional Council baseline monitoring programme was designed for state of the environment reporting rather than public health monitoring. The enterococci sampling programme was designed to detect long term trends in water quality. Because of the frequency, the results of this programme are less reliable for assessing the short term contamination issues that may affect suitability for contact recreation. A sampling frequency of weekly over the period 1st November-31st March is recommended by the new guidelines. The faecal coliform sampling programme was able to be used to determine the suitability of coastal waters for shellfish gathering purposes however, as the shellfish guidelines do not require weekly sampling over summer or resampling once poor results are obtained.

Summer bathing beach monitoring programmes were conducted by the territorial authorities in the western Region and the Regional Council in the Wairarapa. Results from these programmes can more reliably be used in assessing the suitability of bathing beaches for contact recreational purposes. The bathing beach programmes followed the new "Recreational Water Quality Guidelines" introduced in 1999.

4. Results

The results of monitoring undertaken between March 1999 and February 2000 are presented in detail within the "Annual Coastal Water Quality Report 1999-2000". Copies of the report will be available at the meeting for Councillors who would like a copy.

The key findings were:

Baseline Enterococci Results (March 99-Feb 2000):

Baseline enterococci results have identified some water quality problems within the Region. On the Kapiti Coast high enterococci counts were identified at the mouth of the Waikanae River and at two coastal sites to the south of the mouth. High counts were also recorded at the mouth of the Mangaone Stream. Median enterococci counts were lower at all of these sites than those recorded in 1998-99 however.

Within the Porirua District, highest enterococci counts were recorded at the Taupo Stream Mouth, Onehunga Bay and Te Hiko St. The median enterococci value for the Taupo Stream Mouth was around half that recorded in 1998-99. The median value for Onehunga Bay and Te Hiko St were higher than the 1998-99 results however.

The highest median enterococci counts for the Eastern Harbour were recorded at the Petone Wharf, Hinds Point and Pencarrow Bluff sites. The medians for all of these sites were higher than the 1998-99 values. The most notable increase was recorded at Petone Wharf.

Hataitai Beach and Evans Bay recorded the highest median enterococci counts for the Wellington City area. The median value increased since 1998-1999 at Hataitai and decreased at Evan's Bay.

Riversdale Lagoon recorded the highest baseline median enterococci result within the Wairarapa. None of the Wairarapa sites showed notable increases or decreases since last year.

Baseline Faecal Coliform Results (Indicator for Shellfish Gathering Purposes) :

The suitability of coastal water for shellfish gathering purposes was assessed at 13 sites around the Region. All complied with the shellfish gathering guidelines except Peka Peka Beach, Inconstant Point, and the Riversdale Lagoon Mouth. These same three sites failed to meet the guidelines last year.

Summer Bathing Beach Compliance (Western Territorial Authorities' and Wairarapa Division's enterococci results):

The Region's bathing beaches generally had good water quality during the bathing season. Only two sites of the 44 bathing beaches monitored breached the guidelines for contact recreation. These were the Riversdale Lagoon and the Taupo Stream Mouth. Both sites are influenced by streams which receive bacterial contaminants with run-off from terrestrial sources (such as agricultural wastes).

5. Report Conclusions

There was no overall change in the Region's coastal water quality (Table 1) with six sites showing increased median enterococci values since last year, six sites recording lower median values, and one site showing no notable change.

The greatest improvements occurred at the Taupo Stream Mouth, the Mangaone Stream Mouth, and Evans Bay, whilst the greatest decrease in water quality occurred at the Petone Wharf.

Table 1: Summary of baseline sites recording median values above 35 enterococci/100ml (1st Mar 1999 – 29th Feb 2000) and comparison with last year's median

Area	Site	1998-1999 Median	1999-2000 Median
Kapiti	Wharemauku Rd, Paraparaumu	60	**36 (↘)**
	MacLean St, Paraparaumu	129	**70 (↘)**
	Tutere St, Waikanae	105	**100 (↘)**
	Mangaone Stream Mouth, Te Horo	370	**200 (↘)**
Porirua	Taupo Stream Mouth	185	**95 (↘)**
	Onehunga Bay	31	**39 (↗)**
	Te Hiko St, Porirua Harbour	117	**150 (↗)**
Eastern Harbour	Hinds Point	2	**38 (↗)**
	Pencarrow Bluff	4	**38 (↗)**
	Petone Wharf	30	**210 (↗)**
Wellington	Evans Bay	470	**100 (↘)**
	Hataitai Beach	12	**42 (↗)**
Wairarapa	Riversdale Lagoon	90	**92.5** (no notable change)

N.B: **(↘)** indicates a decrease in median enterococci concentration since 1998-99
(↗) indicates an increase in median enterococci concentration since 1998-99

Generally sites located near streams or stormwater outlets had the worst water quality within the Region. Faecal contaminants can be derived from many terrestrial sources and may enter streams and stormwater systems though surface runoff or direct discharges. To improve the quality of our Region's coastal water, it appears that we should primarily focus upon enhancing the quality of the streams, rivers, sewers and stormwater systems.

6. Implications

This report has highlighted a duplication of monitoring effort between the Wellington Regional Council and the territorial authorities. As the territorial authorities and the Regional Council both monitor enterococci levels (often at similar sites) there is scope for improving the efficiency of the current monitoring systems by developing an integrated monitoring programme.

It is recommended that future monitoring of shellfish should involve more than just analysing the faecal coliform levels in coastal waters. Analysis of the shellfish flesh itself for contaminants could be undertaken to determine the actual risks associated with consuming shellfish from the Region's popular harvesting locations.

There is a disparity between the amount of sampling undertaken within the Region's freshwater and coastal environments. 11 physico-chemical parameters and faecal coliforms are monitored monthly as part of the baseline freshwater programme. Macroinvertebrates are also monitored annually as bioindicators of stream health. In the coastal environment only faecal coliform and enterococci concentrations are monitored

along with some factors that may effect these concentrations (e.g. temperature, salinity, and seaweed). Some form of ecological monitoring should be undertaken within the coastal environment to enable the Council to determine whether it's management practices are effective in preserving the intrinsic value and life supporting capacities of the coast (policies 4.1.1 and 4.1.4 Regional Coastal Plan).

7. Further Action

The following actions will be, or are being, taken to address the issues raised in the Annual Coastal Water Quality Report:

1) Regional Council staff are working with territorial authorities to develop an integrated coastal water quality monitoring programme. This new monitoring programme will meet the requirements of the "Recreational Water Quality Guidelines" and will be implemented for the next bathing season starting 1st November 2000

2) Our monitoring of shellfish gathering areas will be enhanced by undertaking a shellfish flesh sampling programme. Provision for this enhanced monitoring is included in the current budget

3) An ecological monitoring programme for coastal marine areas will be developed and implemented. Provision for this enhanced monitoring is included in the current budget.

4) An investigation designed to determine the effects and sources of stormwater contamination will be undertaken by the Regional Council over the next two years.

8. Communications

The main findings of the report will be communicated to the public through a press release. Each territorial authority will also receive a copy of the report. Discussions have been held with the territorial authorities regarding analysis of results during the preparation of the report.

9. Regional Policy Statement Implementation

Coastal water quality monitoring helps assess the achievement of policies within the Regional Policy Statement. Policies 1(4) and 5 require monitoring to ensure that coastal water quality is being maintained or improved.

10. **Recommendation**

That the report be received and the contents noted.

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