

9.5 CONTRACT RECREATION WATER QUALITY REPORT - SUMMER 2020-21

Information Only - No Decision Required

Report To: Operations Committee
Meeting Date: 24 June 2021
Report Author: Trevor James, Resource Scientist
Report Number: ROC21-06-5

1 Summary

- 1.1 A total of 12 sites (six freshwater, four coastal and two tidal river) were sampled each for faecal indicator bacteria between mid-November 2020 and March 2021.
- 1.2 Out of a total of 215 samples taken there were a total of 11 (“Alarm/Red”) exceedances of national microbiological water quality guidelines. Of the 11 samples, only one “Alarm/Red” level was during a fine weather period, and that was at Pohara Beach. This occurred within two hours before high tide. It is a common occurrence to have high faecal indicator bacteria concentrations near high tide at this site. Over all samples in dry weather conditions approximately 99.4% of samples meet (alarm level) guidelines. This compares to the average for the last 10 years of 97%. This rate of compliance is well within the Long Term Plan (stretch) target of 98%.
- 1.3 Included in the 12 sites sampled this season were three river recreation sites in the Buller: Buller River at Riverside Campground, Buller at O’Sullivan’s Bridge (SH60), and the Maruia River 1km upstream of the Buller. Results showed that each of the sites were well within “swimmable” levels on all but one occasion which was influenced by rain.
- 1.4 No non-compliance (alarm level) results were recorded for freshwater sites.
- 1.5 Using the Ministry for the Environment “Suitability for Recreation Grade” for core marine sites criteria including rainfall-affected samples, Rabbit Island Main Beach continues to be graded “Very Good”. Mapua Leisure Park Beaches were “Good” and Pohara Beach was again graded “Poor” due to occasional very high faecal indicator bacteria results (mostly around very high tides). Kaiteriteri was downgraded from “Good” to “Fair” due to three samples above 140 Enterococci/100ml (but below 280/100ml). A large flood in the Motueka River may have influenced two of those three samples.
- 1.6 For freshwater sites: Takaka at Paynes Ford, Takaka at Waitapu Bridge and Lee Reserve were all in the ‘Blue/Excellent’ category, with Roding at Twin Bridges in the ‘Green/Good’ category and Collingwood Boat Ramp in the “Orange/Poor” category when assessed against the attributes in the National Policy Statement for Freshwater Management, when rain-affected samples were included.
- 1.7 Toxic algae levels never exceeded interim guidelines at monitored sites over the 2020-21 season. No dog deaths have been recorded since 2010 that were likely to be due to toxic algae.

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2 Draft Resolution

That the Operations Committee receives the Contract Recreation Water Quality Report - Summer 2020-21 ROC21-06-5

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3 Purpose of the Report

- 3.1 To present information from the regular Contact Recreation Water Quality Monitoring Programme over the 2020-21 season, toxic algae issues and any other related investigations or issues.

4 Background and Discussion

- 4.1 Out of a total of 215 samples taken there were a total of 11 (“Alarm/Red”) exceedances of national microbiological water quality guidelines (see Table 1 below). Of the 11 samples, only one “Alarm/Red” level was during a fine weather period, and that was at Pohara Beach. This occurred within two hours before high tide. It is a common occurrence to have high faecal indicator bacteria concentrations near high tide at this site. Over all samples in dry weather conditions approximately 99.4% of samples meet (alarm level) guidelines. This compares to the average for the last 10 years of 97%. This rate of compliance is well within the Long Term Plan (stretch) target of 98%.

Table 1: Statistics for the 2020-21 Season (November to March)

Total number of samples	215
Total number of exceedances (alert and alarm)	18
Total number of exceedances (alarm only)	11
Overall rate of compliance with guidelines (alert and alarm)	91.6%
Overall rate of compliance with guidelines (alarm only)	94.9%
Exceedances – Freshwater	13/132
Exceedances – Coastal	5/83
Exceedances – Fine weather	4/165
Rate of compliance in fine weather	97.6%
Rate of compliance in fine weather when amber alerts are ignored (red alerts only)	99.4%

- 4.2 This season only Rabbit Island Main Beach was fully compliant in all weather.
- 4.3 For most sites, particularly freshwater sites, an exceedance of the standards or guidelines is likely after more than 20mm of rainfall in 24 hours. For a few sites, more than 10mm of rainfall within 48 hours can be enough to produce an exceedance, particularly if there is intensive farming or urbanisation in the upstream catchment (e.g. Pohara Beach). To keep the public aware of this risk, Council issues standard guidance for people to avoid swimming within 48 hours of rain. Standard warning signs are only installed after two consecutive samples are found over alarm levels, or at the instruction of the Public Health Office of the District Health Board. These signs are taken down as soon as there are two consecutive samples under alarm levels. Sampling frequency is very high in these situations.

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4.4 **Marine Sites.** Data for all coastal beaches monitoring programme for the 2020-21 season are presented in Figure 1 below.

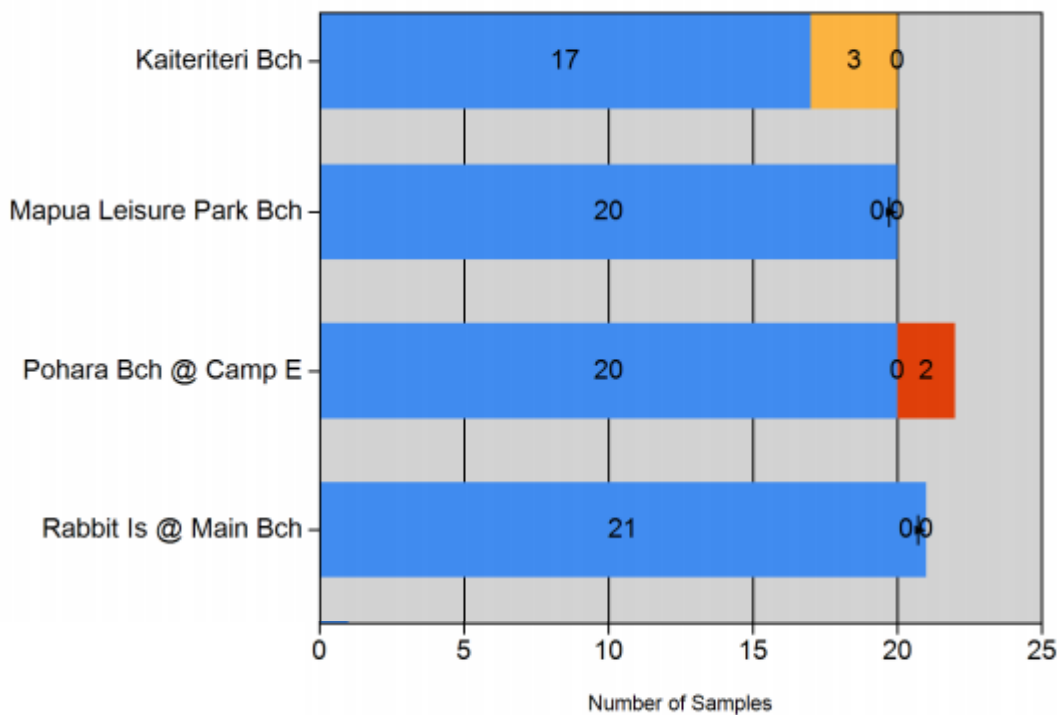


Figure 1: Number of samples exceeding national guidelines for contact recreation water quality at coastal beaches for the 2020-2021 season. **Red** results are over alarm levels (>280 *Enterococci*/100ml) and **orange** results are in the alert range (140-280 *Enterococci*/100ml).

4.5 **Beach Grades.** In the absence of a National Policy Statement for coastal water, we use the Ministry for the Environment “Suitability for Recreation Grade” (2003) criteria and have assessed this using data over the last five years. The Mapua site oscillates between “Good” to “Very Good”. This season it remained the same as the previous season at “Good”. Rabbit Island Main Beach continues to be graded “Very Good”, Kaiteriteri declined from “Good” to “Fair”. A large flood in the Motueka River on 21 January may have influenced two of those three samples (on 26 and 29 January) but the other on 23 February was within a long dry period. Pohara Beach improved from “Poor” to “Fair” (see Table 2).

Hazen 95th percentiles for coastal sites, all-weather (minimum 100 samples required):

Site	From	To	N	Hazen 95th Percentile	Microbiological Assessment Category	Sanitary Inspection Category	Suitability for Recreation Grade	Change from 2019-20
Kaiteriteri Bch	2016-11-22	2021-02-23	113	261	C	Low	Fair	↓
Mapua Leisure Park Bch	2016-11-22	2021-02-23	114	138	B	Moderate	Good	NC
Pohara Bch @ Camp E	2016-11-22	2021-02-23	115	383	C	Moderate	Fair	↑

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Rabbit Is @ Main Bch	2016-11-22	2021-02-23	107	40	A	Very Low	Very Good	NC
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Table 2. Assessment of Suitability for Recreation Grade (all samples in all weather) for the Marine sites in the contact recreation bathing water quality programme from 2016-2021. ‘NC’ = no change.

* Indicate interim gradings.

4.6 **Freshwater Sites.** Data for the freshwater site monitoring programme for the 2020-21 season are presented in Figure 2 below. There was no change in the overall site categorization from the 2019-20 season.

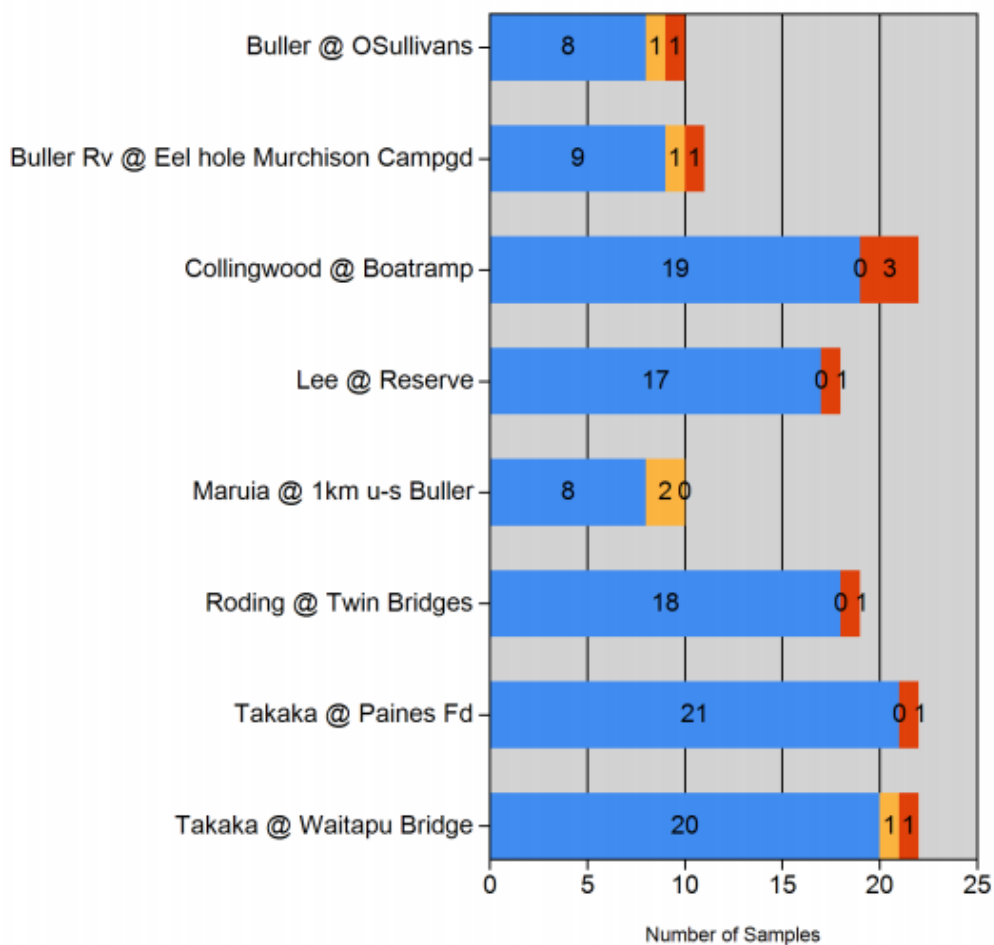


Figure 2. Number of samples exceeding national guidelines for contact recreation water quality at freshwater swimming holes for the 2020-21 season. Red results are over alarm levels (>550 E.coli/100ml) and orange results are in the alert range (260-550 E.coli/100ml).

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CATEGORY	PERCENTAGE OF EXCEEDANCES OVER 540: E. COLI PER 100 ML	MEDIAN: E. COLI PER 100 ML	95 TH PERCENTILE: E. COLI PER 100 ML	PERCENTAGE OF SAMPLES ABOVE 260: E. COLI PER 100 ML
Blue	< 5 per cent	≤ 130	≤ 540	< 20 per cent
Green	5-10 per cent	≤ 130	≤ 1000	20-30 per cent
Yellow	10-20 per cent	≤ 130	≤ 1200	20-34 per cent
Orange	20-30 per cent	>130	>1200	>34 per cent
Red	> 30 per cent	>260	>1200	>50 per cent

Table 3. Ministry for the Environment proposed *E.coli* “swimming categories” (attribute states).

- 4.7 **Swimmability Categorisation.** Based on data over the last five years against the criteria shown in Table 3, all of our core monitored freshwater swimming sites are very suitable for contact recreation. The predicted average infection risk of 1% (Blue category), except for the Roding which was 2% (Green category) (see Table 4). The Roding River was very close to being in the Blue category. For freshwater sites it is the 95th percentile that is the most likely statistic to cause a site to fail. Most of the other statistics are highly correlated with each other and all have relevance to assessing suitability for swimming.

Site	From	To	N	Percentage of samples over 260 E.coli/100ml	Percentage of samples over 540 E.coli/100ml	Median E.coli/100ml	95 th percentile E.coli/100ml	Category	Change from 2019-20
Lee @ Reserve	2016-11-22	2021-02-23	104	5.8	4.8	26.0	324	A	NC
Roding @ Twin Bridges	2016-11-22	2021-02-23	114	10.5	6.1	47.0	668	B	NC
Takaka @ Paines Fd	2016-11-22	2021-02-23	110	4.5	2.7	23.0	249	A	NC
Takaka @ Waitapu Bridge	2018-12-04	2021-02-23	68	8.8	4.4	44.5	375	A	ID
Collingwood @ Boatramp	2018-12-04	2021-02-23	68	23.5	13.2	78.0	1430	D	ID

Table 4. Analysis of E.coli at Council’s core freshwater monitoring sites against the swimming categories in the National Policy Statement for Freshwater Management 2020. Statistics over five sampling seasons (November 2016 to March 2021 inclusive). This is for samples taken in all-weather including wet weather (minimum 60 samples).

NC = no change, ID = insufficient data record

- 4.8 A one-off sampling campaign of 10 samples from three sites was undertaken in the Buller catchment near Murchison in January-March 2021. The sites included Buller River at Riverside Campground (very popular for swimming and kayak rolling training), Buller at O’Sullivans (just upstream of the SH6 bridge, very popular for kayaking and rafting) and the Maruia River 1km upstream of the Buller (seldom sampled but has a reasonable

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amount of intensive farming in the catchment). Median *E.coli* concentrations over the 10 samples were: 24, 39 and 30 *E.coli*/100ml respectively. The sites were “swimmable” on all but one occasion (29 March) which was influenced by rain (21.5mm on the 28 March and 0.5mm on 29 March).

- 4.9 Sampling in the Buller catchment is undertaken at four sites near Murchison monthly as part of the River Water Quality Monitoring Programme and *E.coli* concentrations are generally very low except after rain. Contact recreation at Kerr Bay at Lake Rotoiti is moderately popular but sampling has not been undertaken for many years and regular sampling ceased at Black Valley Stream (the main at-risk waterway feeding the lake) in 2016. Sampling at this site is being considered for the 2021-22 season.
- 4.10 **Toxic Algae in Rivers.** There has not been a reported dog death suspected as being caused by toxic algae since 2010. Toxic algae levels were below interim guidelines (>20% bed coverage) the whole season at all the monitored freshwater sites. It appears that the coverage of toxic algae in the lower Wai-iti River continues to reduce. However, our monitoring, while according to the guidelines is very limited due to the small area sampled. While the use of drones for this assessment over a much larger area would be a much more effective way to sample, this is currently beyond Council resources.

Predicting Faecal Indicator Bacteria Concentrations in Golden Bay and Tasman Bay

- 4.11 Unfortunately, after a reasonable amount of effort the model that aimed to predict faecal indicator bacteria in Golden Bay and Tasman Bay did not work. The model works for rivers and appeared to work for *E.coli* in near-shore waters, but only Enterococci is used for sampling in the marine environment. If it had worked, it would have been a major advance in being able to warn people of the risks of contact recreation at the time of the risk occurring, and not two days later when the lab results are provided. The model development was funded by the Sustainable Seas funded programme with Council provided some data for the model.

5 Conclusion

- 5.1 Over all weather conditions approximately 94.9% of samples meet the regulations or guidelines. When only dry weather conditions are considered, the rate of compliance for both marine and freshwater sites over the past summer was almost 99.4%. This rate of compliance is above the Long Term Plan (stretch) target of 98%. The average dry weather compliance rate of 97% over the last 10 years.
- 5.2 Toxic algae coverage was very low at all monitored sites.

6 Next Steps / Timeline

- 6.1 Next summer, sampling will occur at the core seven bathing water quality sites and at least six sites in the Buller catchment for at least 20 samples for the season. Sites to include: Lake Rotoiti at Kerr Bay.
- 6.2 Work with Council’s Information Technology Department for the development of a system to tag samples affected by wet weather so we can more efficiently present fine weather

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data. This is an analysis tool that would save staff 1.5 days each year for this programme alone and potentially 1-2 weeks for river water quality reporting.

Attachments

Nil