Surface Water Quality

Monitoring Summary 2011

Key points

- 54 river sites are monitored across Marlborough.
- Chemical, physical and biological components are measured and analysed to determine water quality grades.
- High concentrations of suspended solids, bacteria and heavy metals occur after heavy rainfall, particularly in urban and agricultural catchments.
- Diffuse pollution is the main cause of river pollution in Marlborough.
- Approximately 50% of sites are graded as excellent or good.
- Approximately 20% of sites are graded as poor or very poor.

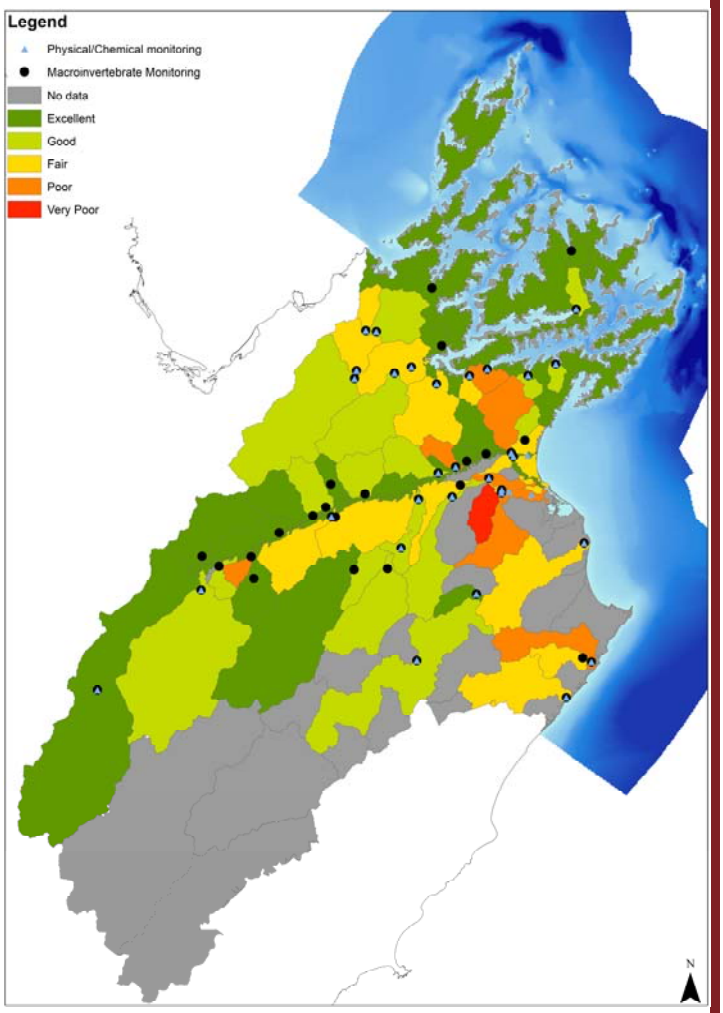
Why we monitor water quality

- To assess the current state of our freshwaters for the region
- To identify trends in water quality over time.
- To assess the effectiveness of land management practices
- To ensure the values of our rivers and streams (i.e. recreational, ecological, fish spawning etc.) are not compromised by existing and changing land use practices.
- To monitor the effectiveness of our plans and policies.

Where and how we monitor water quality

Monitoring is carried out at 54 sites across the region as shown in the above map. Some sites are monitored monthly and some annually. A mixture of physical, chemical and biological measurements are taken at each site.

The physical, chemical and biological parameters are analysed and a water quality 'grade' is determined for each site. This grade represents water quality for the catchment and or 'unit' monitored. The above map summarises water quality for the region and incorporates data from 2007 to 2010. Water quality can change from year to year depending on the weather, wetter years typically result in poorer water quality as more contaminants are washed from the land into waterways, therefore data from multiple years is analysed to get a representative state of current water quality.



Water quality for the major catchments monitored

What causes poor water quality?

Approximately half of sites are graded as excellent or good, whilst 20% are graded as poor or very poor. The poorest water quality is in areas which have been intensively developed, either for agriculture or urbanisation.

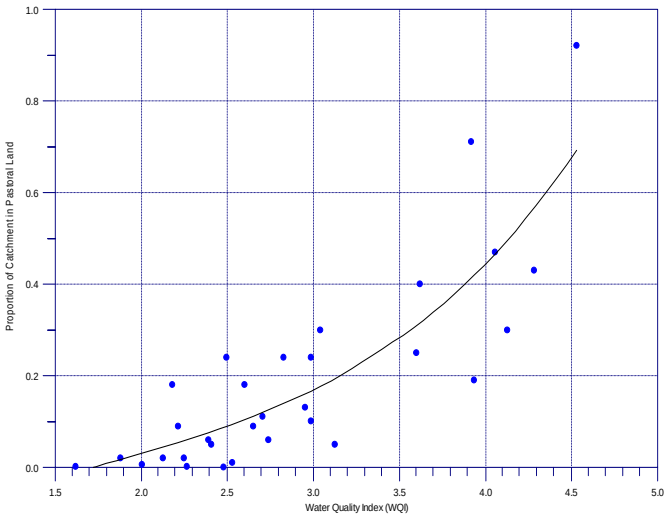
Heavy rainfall can result in contaminants being washed from the surrounding land into waterways, this is particularly evident in urban and intensive agriculture areas. In particular suspended solids, *E. coli* and heavy metal concentrations increase during rainfall.

Some parameters exhibit a seasonal variation in concentration e.g. nitrates. Nitrates are typically higher during the wetter winter months.

What do we monitor?

- Nitrate
- Phosphorus
- Ammonia
- *E. coli*
- Turbidity
- Suspended Solids
- pH
- Conductivity
- Dissolved Oxygen
- Temperature
- Copper
- Zinc
- Arsenic
- Macroinvertebrates

Because of the variety of parameters that are measured it can be difficult to summarise water quality for a particular river, for this reason we use an index which summarises the data. There is one index used for the physical/chemical measurements and one the biological measurements (in this case macroinvertebrates). Both indices are highly correlated, meaning that although they describe different attributes they are comparable. Poor water quality is highly correlated with the amount of pastoral land in the catchment, the more pastoral land the poorer the water quality. Water quality deteriorates more rapidly when more than a quarter of the catchment is in pastoral land. Improving land management practices will help to slow and reverse this trend.



Relationship between the increasing proportion of pastoral land in the catchment and deteriorating water quality

Examples of macroinvertebrates found in our waterways

The stonefly *Stenoperla prasina,* found in pristine stony rivers and streams, is one of the most pollution sensitive species found. It requires very high concentrations of dissolved oxygen to thrive

The non-biting midge larvae *Chironomus*, also called a blood worm because of the bright red colour, is one of the most pollution tolerant species, found in polluted and highly enriched waterways.

What can you do?

- Do not pour paint, household cleaners, herbicides, pesticides or other chemicals down stormwater drains as these lead directly into waterways. Dispose of appropriately according to manufacturers instructions.
- Do not use herbicide or pesticide sprays in wet weather or when rain is forecast.
- Maintain riparian strips along waterways where possible, these serve to filter out contaminants and to retard contaminant movement during wet weather. Riparian strips also serve to stabilise stream banks thereby preventing erosion and the addition of sediments into streams.
- Report any pollution events or incidences which you think may pollute our waterways to the Marlborough District Council.

Published

June 2011

For more information on water quality go to

www.marlborough.govt.nz

Marlborough District Council

Seymour Square, Blenheim. Telephone 03 520 7400 Fax 03 520 7496