Kahahakuri results

HAWKE'S BAY REGIONAL COUNCIL
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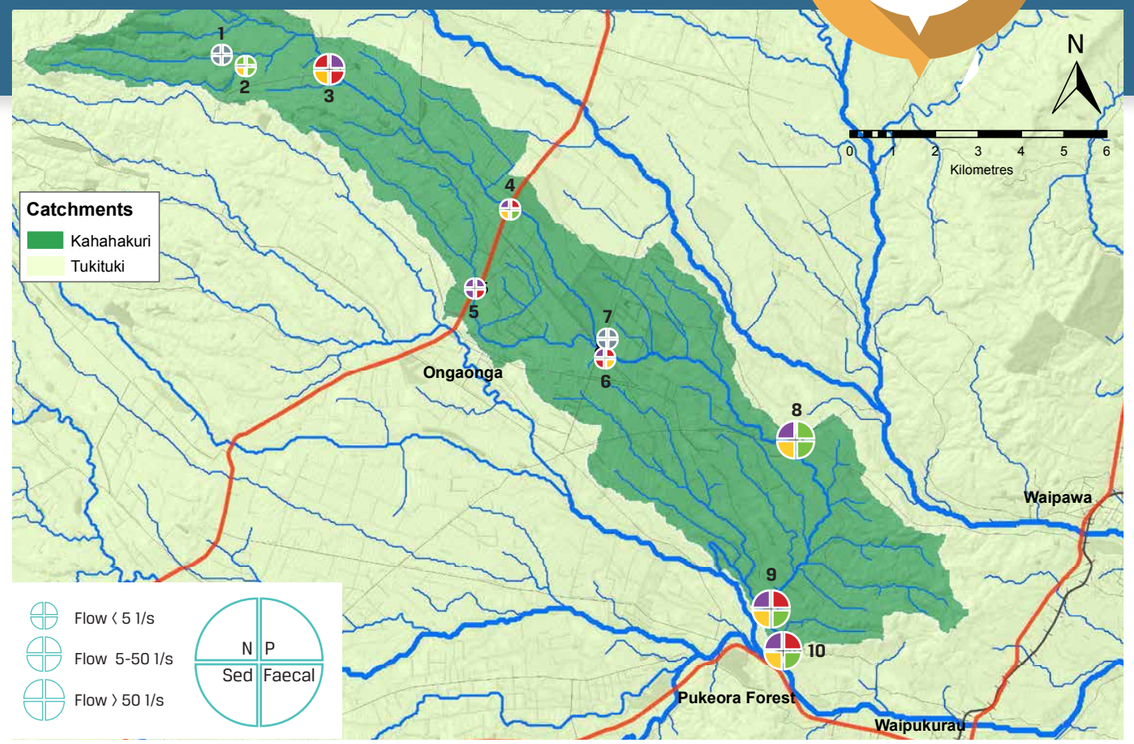


Indicator	Measure	Unit	Statistic	Good	Warning	Bad	Extreme
Nitrogen	Dissolved Inorganic Nitrogen	mg/l	Mean	<0.64	0.64 - 0.8	0.8 - 1.6	>1.6
Phosphorus	Dissolved Reactive Phosphorus	mg/l	Mean	<0.012	0.012 - 0.015	0.015 - 0.03	>0.03
Sediment	Turbidity	NTU	Median	<0.9	0.9 - 4.1	4.1 - 8.2	>8.2
Faecal	*Escherischia coli*	cfu/100ml	Median	<130	130 - 260	260 - 540	>540

DIN and DRP fuel algal growth, turbidity shows how muddy the water is, *E. coli* indicates risk of pathogenic infection

cfu = colony forming units
NTU = nephelometric turbidity units

SITE	NITROGEN	PHOSPHORUS	SEDIMENT	FAECAL	FLOW	SAMPLES
1. Kahahakuri Stream Tributary at McLeod Road (Woodfields Station)	Not flowing enough for sampling					1
2. Kahahakuri Stream Tributary at McLeod Road, Springhill Reserve	0.29	0.005	1.56	50	3	6
3. Kahahakuri Stream Tributary at McLeod Road, Springhill	2.06	0.020	1.71	530	7	7
4. Kahahakuri Stream Tributary at SH50, Chestermans Bridge	4.61	0.016	1.72	40	0	2
5. Kahahakuri Stream at SH50	3.89	0.064	11.80	345	0	6
6. Kahahakuri Stream at Plantation Road Bridge	7.80	0.021	4.70	220	2	3
7. Kahahakuri Stream Tributary at Plantation Road	Not flowing enough for sampling					1
8. Kahahakuri Stream at Ongaonga (Fairfield) Road	4.83	0.011	1.01	80	551	7
9. Black Stream at Kahahakuri Confluence	3.82	0.027	2.00	70	530	7
10. Kahahakuri Stream at Lindsay Road	4.00	0.023	1.55	99	1434	8

Sampling undertaken 2015/16.

For more information contact one of our catchment advisors at the HBRC Waipawa office on 0800 108 838

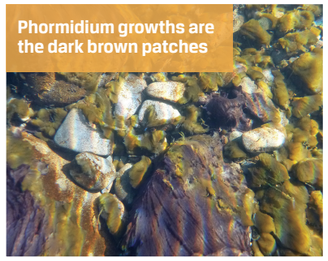
What's going on in the Kahahakuri sub-catchment?

The Kahahakuri is a sub-catchment in the Tukituki covering around 9,100 hectares.

There are about 70 properties in this sub-catchment over 4 hectares in size, mainly in sheep and beef, dairy and some horticulture operations.

Human activity has significantly altered the landscape in these catchments. Riparian health is poor, with an estimated 91% of small streams in the Kahahakuri having fair or poor vegetation quality. 58% of stream edges have moderate to high disturbance from stock.

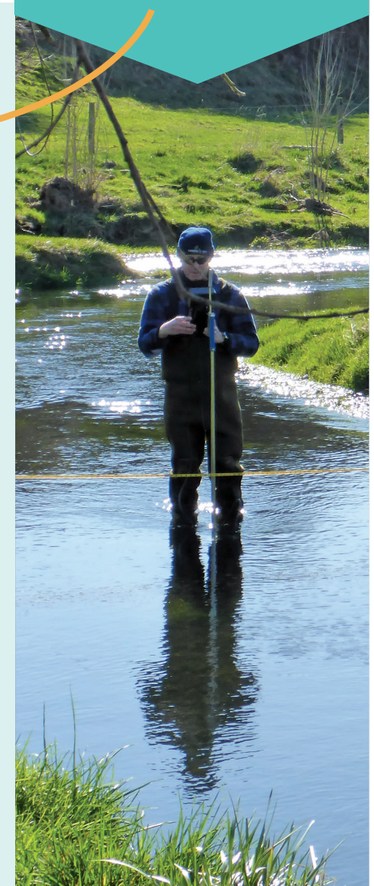
Long term water quality monitoring has shown that dissolved organic nitrogen (DIN) and dissolved reactive phosphorus (DRP) fail to meet targets set out in the Tukituki Plan. These two nutrients help fuel excessive algae and phormidium growth, causing problems in the Tukituki River.


Phormidium growths are the dark brown patches


Slime algae in the Tukituki River

The Regional Council carried out a targeted monitoring programme of 10 sites in the Kahahakuri to identify water quality patterns in more detail, and to help identify solutions.

This study may be repeated in future to help identify opportunities for improvement in this priority sub-catchment.



What did we find?

All but one site had problem levels with at least 1 of 4 main contaminants.

Phosphorus targets were also often breached, but to a lesser degree than nitrogen. Faecal contamination was mixed. Five sites had low levels but two sites breached the target and sediment levels were elevated throughout. The Springhill Reserve site was the only one without problem levels of contaminants.

The flow pattern in the Kahahakuri is complicated. River flow is lowest in the middle reaches of the Kahahakuri catchment, and increases substantially in the lower reaches. The increases in Kahahakuri River flow in the lower catchment may come from groundwater travelling within the catchment itself, but there may also be groundwater contributions from the Waipawa catchment to the north, and/or from the Tukituki catchment to the south. Further work is required to investigate the sources of flow and nutrients to the lower Kahahakuri.

Surface water quality patterns show there are clearly localised sources of contaminants causing major breaches of both nitrogen and phosphorus targets throughout the Kahahakuri. Immediate attention should be given to reducing nutrient losses, reducing sediment levels and improving stock and riparian management.

The Kahahakuri Stream at Lindsay Road site will be monitored for compliance with Tukituki Plan targets.

What can you do to improve the water quality in the Kahahakuri sub-catchment?

Your tailored Farm Plan will identify approaches to reduce nutrient and sediment loss on your property. Some common solutions include:

Managing Critical Source Areas

Anywhere with exposed soil is likely to be a 'critical source area'. Most sediment and phosphorus losses (around 80%) come from a small part of the landscape (around 20%). They may include areas of erosion, stockyards, tracks, races and intensively grazed areas. Critical source areas should be targeted as a priority. Their impact can be reduced through improved management techniques.

Riparian management and stock exclusion

Stock exclusion will contribute to improving stream health. Increasing protection by widening buffer areas near streams and planting will have even greater benefits to reduce phosphorus, sediment and bacteria levels.

Poor riparian habitat (right), and below an example of good riparian planting.

The greatest threats to stream health are usually sediment and poor riparian management.

Reducing nutrient loss (Nitrogen and Phosphorus)

Test your soil before you fertilise it. Olsen-P is a measure of the more mobile fraction of applied phosphorus (P) that is readily available to plants. It is this type of P that is easily lost to water if not taken up by vegetation. Olsen-P should be maintained at an economic and productive optimum, a higher level indicates a risk of surplus P that could be lost to waterways. Test your soil before you fertilise it.

As the Olsen-P increases above 20 mg/kg, the risk of phosphorus loss to waterways increases sharply. So, if you don't need Olsen P to be above 20 mg/kg for production, then don't be. There may be no benefit to production, it costs you more, and there is a big cost to waterways.

- Avoid applying nutrients when plants are not actively growing (i.e. not between May and August), or when heavy rain is forecast
- Winter crops can account for half of your farm's annual nutrient losses - follow best practice guidelines to minimise losses from this critical source area
- Locate silage pits away from waterways
- All else being equal, more stock units = more risk of nutrients lost

Reducing sediment loss

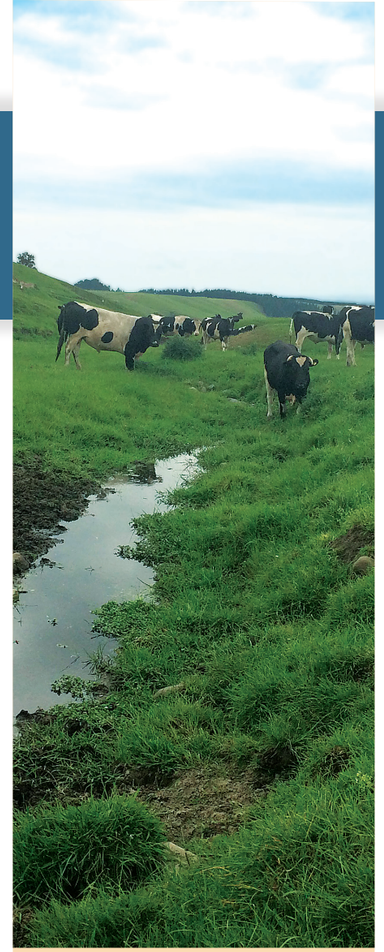
The greatest threats to stream health are usually sediment and poor riparian management.

- Exclude stock from waterways and plant along stream banks wherever practical
- Incorporate buffer strips - thick grass or other heavily vegetated areas - between waterways and tracks, lanes or any other sources of sediment such as worked paddocks or winter crops
- Discuss soil conservation techniques with your Regional Council Catchment Advisor or FEMP provider
- Do not position winter crops near waterways or on steep hills
- Cultivate along the contour, not downhill

Reducing faecal contamination *(E. coli)*

E. coli in water is an indicator of bacteria from excrement.

- Prevent direct stock access to waterways wherever practical
- Faeces is concentrated on tracks, races, laneways, stockyards and around woolsheds - manage these so runoff does not flow straight into a waterway
- Clean your septic tank regularly and ensure it does not receive storm water
- Don't put offal pits near waterways



Stock exclusion helps prevent the pugging, bank instability and direct faecal deposition that can be seen occurring above.

Pole planting (below) helps to stabilise eroding hills, without losing the grazing opportunities.