



ANALYSIS REPORT Page 1 of 3

Client: P Chandler	Lab No: 1735884 <small>DWAPV1</small>
Contact: P Chandler PO Box 4 Waitomo Caves 3943	Date Received: 07-Mar-2017 Date Reported: 13-Mar-2017 Quote No: Order No: Client Reference: Submitted By: P Chandler

Sample Type: Aqueous		Sample Name:	Mangawhikau 07-Mar-2017 10:00 am	Guideline Value	Maximum Acceptable Values (MAV)
		Lab Number:	1735884.1		
Routine Water + E.coli profile kit					
Escherichia coli		MPN / 100mL	> 200	-	< 1
Routine Water Profile					
pH	pH Units		8.0	7.0 - 8.5	-
Total Alkalinity	gm ³ as CaCO ₃		76	-	-
Free Carbon Dioxide	gm ³ at 25°C		1.7	-	-
Total Hardness	gm ³ as CaCO ₃		82	< 200	-
Electrical Conductivity (EC)	mS/m		19.0	-	-
Electrical Conductivity (EC)	µS/cm		190	-	-
Approx Total Dissolved Solts	gm ³		128	< 1000	-
Total Boron	gm ³		0.0102	-	1.4
Total Calcium	gm ³		30	-	-
Total Copper	gm ³		< 0.00053	< 1	2
Total Iron	gm ³		0.152	< 0.2	-
Total Magnesium	gm ³		1.42	-	-
Total Manganese	gm ³		0.0055	< 0.04 (Staining) < 0.10 (Taste)	0.4
Total Potassium	gm ³		0.96	-	-
Total Sodium	gm ³		6.1	< 200	-
Total Zinc	gm ³		< 0.0011	< 1.5	-
Chloride	gm ³		7.3	< 250	-
Nitrate-N	gm ³		0.93	-	11.3
Sulphate	gm ³		3.8	< 250	-

Note: The Guideline Values and Maximum Acceptable Values (MAV) are taken from the publication Drinking-water Standards for New Zealand 2005 (Revised 2008), Ministry of Health. Copies of this publication are available from <http://www.health.govt.nz/publication/drinking-water-standards-new-zealand-2005-revised-2008>

The Maximum Acceptable Values (MAVs) have been defined by the Ministry of Health for parameters of health significance and should not be exceeded. The Guideline Values are the limits for aesthetic determinands that, if exceeded, may render the water unattractive to consumers.

Note that the units gm³ are the same as mg/L and ppm.

Annual Plan Change 1

to submission by Peter and Libby Chandler

277 Te Anga Road

Waitomo Caves



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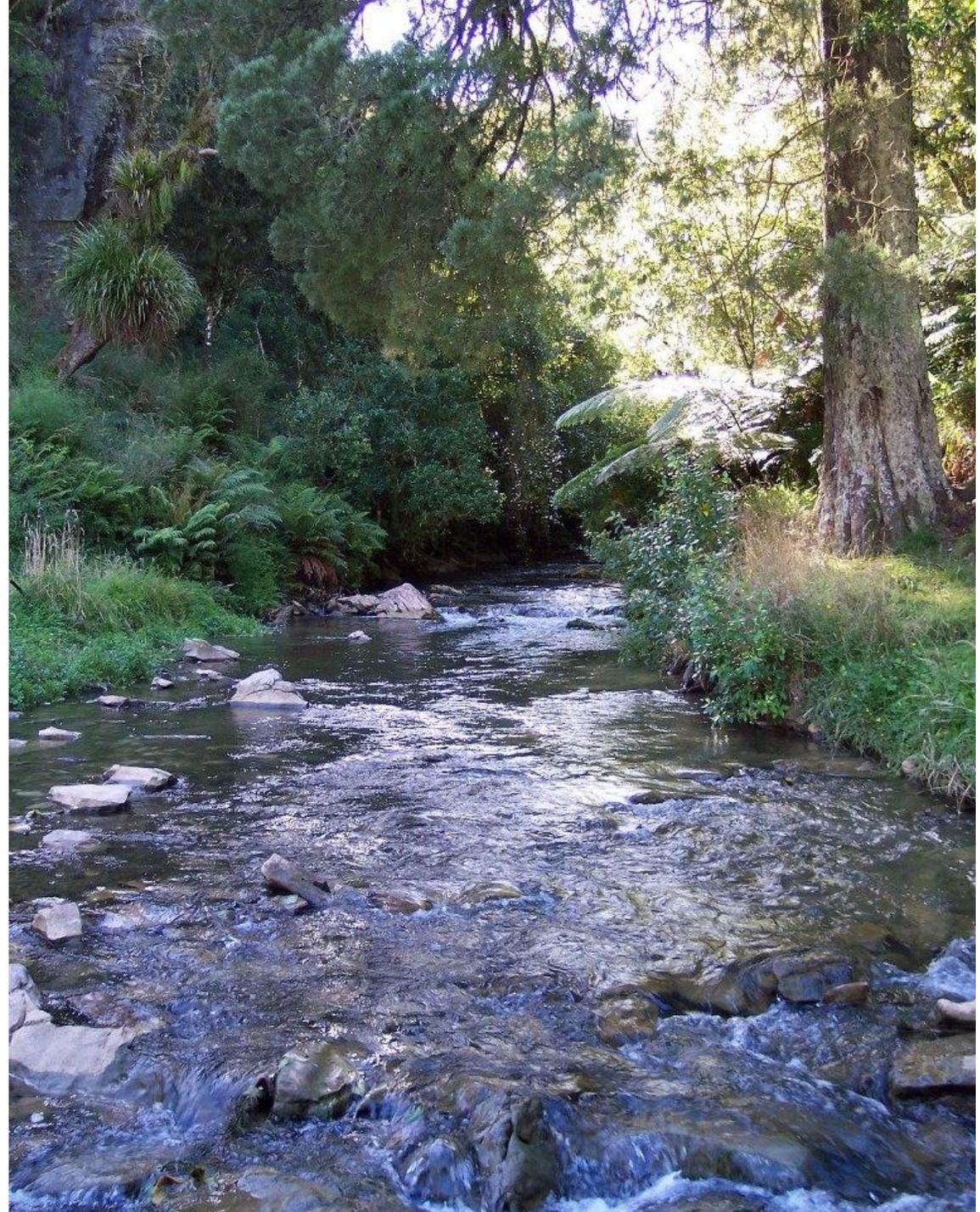
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- Recreational Caver Hamilton Tomo Group, New Zealand Speleological Society.
- Cave Tour Operators, Original Black Water Rafting. 17 years
Spellbound Glowworm Cave 16 years.
- NZ Vice President , Australasian Cave and Karst Management Association.
- Landowners SH 37, Waipuna Road
- Te Araroa Trail Volunteer and enthusiast

Landowners





Finite limits on nutrients would be better to protect such amenity resources. Macroinvertebrates- bugs under rocks are a great indicator of water quality.



Sternoperla

- Only in very pure water
- Adults had been seen occasionally 2000-2015
- Recently only seen in
- Waipuna Cave 2019 (forested catchment)

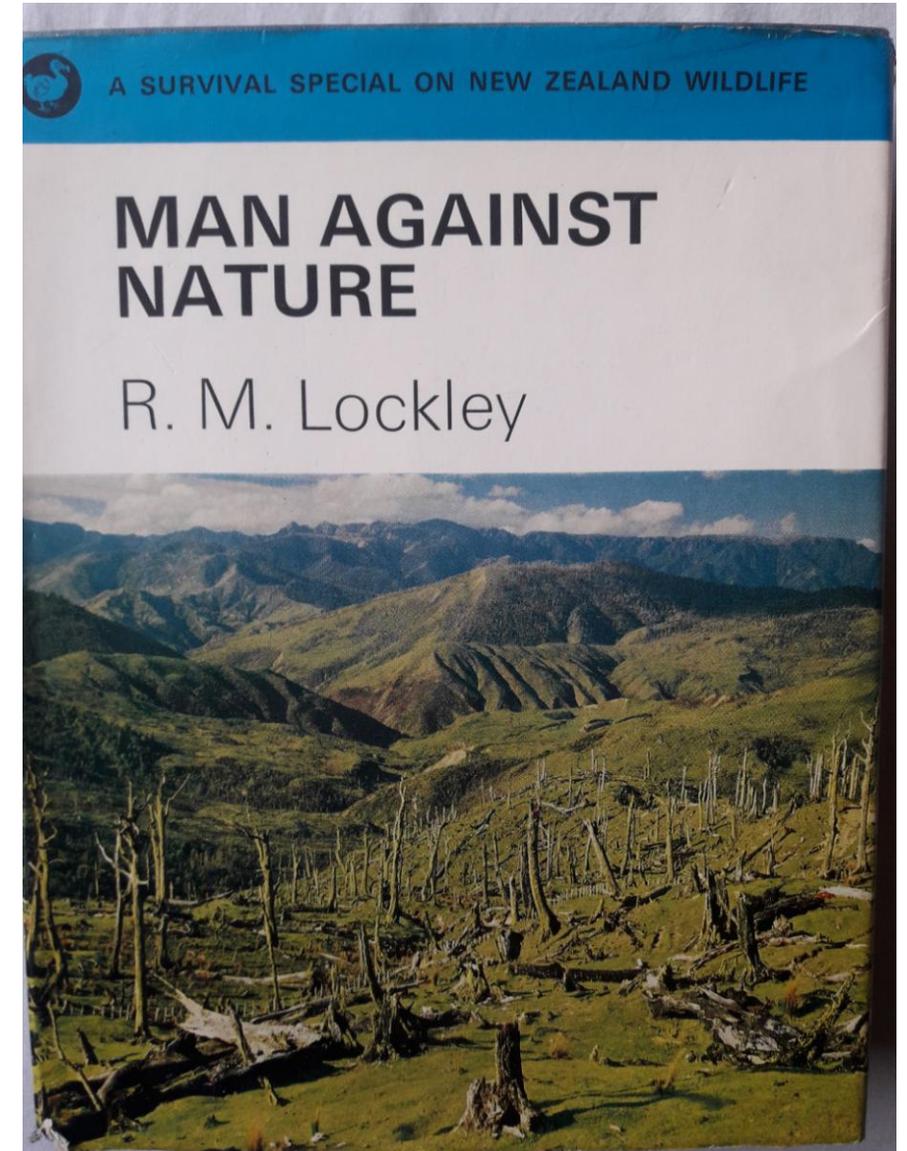


Annual Water Testing- low flow- March

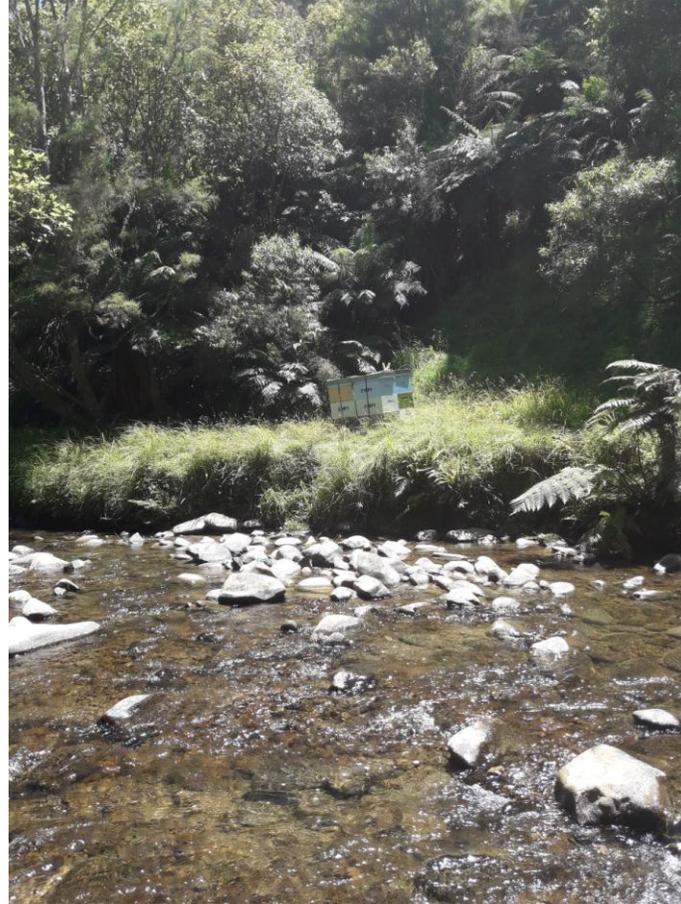
- Since 2017 only
- Nitrate levels 0.97 ,0.93 g /M3

We support initiatives to make rivers swimmable!

- Plenty of examples both good and bad
- General intensification of hill county farming around here over last 30 years
- Farm runoff contributes to turbidity
- Also high bacterial counts in streams
- used for swimming. Black Water Rafting
- and Adventure Cave Tours
- Need to mitigate these effects!



Summer - mountainbike ride/ walk/swim
Moakuraru stream. Only stream on Te Araroa Trail
between Pirongia and Waitomo Caves (60km)



Soil Erosion, easily fixed but nothing done.





Wetlands- removal in headwaters= increased flood events. February 2004 huge flood event.

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Grazing on steep hills- loss of topsoil.

Welcome initiatives to retire and plant these steep hillsides

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Cavers notice when entrances are blocked by sediment.

- Shangri La Cave , Fullerton Road (middle entrance was blocked)
- Haggas Hole Te Anga Road
- Henry VIII, Gardeners Gut (now re opened after much effort)

In Summary

- Since April 2017 when this submission was made there has been continued talk about water quality, forestry and mitigation of climate change.

A higher carbon price, and agricultural emissions being included in the ETS could change hill country farming alot.

It is noted that international air travel is not.

Chart from Raglan Seminar about climate change on coastal communities.

