


TO: Stewart Cameron
Groundwater, IGNS
Private Bag 2000
TAUPO

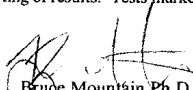
Report Date: 11/12/2003
Report No. WAL 031029001
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ANALYTICAL REPORT :: Waiouru Spring Water

	Lab. Ref. no.	2302236
	Collection Date	24/10/2003
	Clients Field ID	Waiouru
Alkalinity (as HCO ₃)	mg/L	148
pH		7.73
Analysis Temperature	°C	19
Conductivity	µS/cm	250
Sodium	mg/L	4.8
Potassium	mg/L	0.84
Calcium	mg/L	43
Magnesium	mg/L	2.5
Iron	mg/L	<0.02
Mn by ICP	mg/L	<0.005
Silica (as SiO ₂)	mg/L	18.6
Fluoride	mg/L	0.05
Chloride	mg/L	5.4
Bromide	mg/L	<0.10
Nitrate (as N)	mg/L	0.25
Phosphate (as P)	mg/L	<0.05
Sulphate	mg/L	6.3
Ammonium (as N) †	mg/L	<0.01
Arsenic †	mg/L	<0.02
Aluminium †	mg/L	<0.06
Boron †	mg/L	<0.1
Cadmium †	mg/L	<0.001
Cobalt †	mg/L	<0.004
Chromium - ICP †	mg/L	<0.01
Copper by ICP †	mg/L	<0.01
Nickel †	mg/L	<0.01
Lithium †	mg/L	0.008
Lead †	mg/L	<0.002
Zinc †	mg/L	<0.02
Molybdenum †	mg/L	<0.004
Antimony †	mg/L	<0.004
Tin †	mg/L	<0.01
Vanadium †	mg/L	<0.02

Analyst Comments : The results pertain to samples as received. This document shall not be reproduced, except in full. Samples are held in storage for a period of twelve (12) months after the reporting of results. Tests marked † were subcontracted to another Laboratory.


Moya Appleby
Analyst


Bruce Mountain, Ph.D.
Geochemist



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The tests reported herein have been performed in accordance with its terms
of accreditation, with the exception of the tests marked with a †



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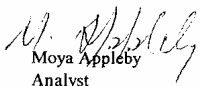
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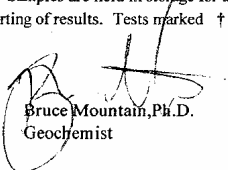
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ANALYTICAL REPORT :: Wanganui Bore Water

	Lab. Ref. no.	2302237
	Collection Date	24/10/2003
	Clients Field ID	Wanganui
Alkalinity (as HCO ₃)	mg/L	262
pH		8.20
Analysis Temperature	°C	20
Conductivity	µS/cm	520
Sodium	mg/L	84
Potassium	mg/L	8.4
Calcium	mg/L	17.8
Magnesium	mg/L	4.0
Iron	mg/L	0.09
Mn by ICP	mg/L	0.07
Silica (as SiO ₂)	mg/L	65
Fluoride	mg/L	0.09
Chloride	mg/L	9.1
Bromide	mg/L	<0.10
Nitrate (as N)	mg/L	<0.03
Phosphate (as P)	mg/L	0.15
Sulphate	mg/L	45
Ammonium (as N) †	mg/L	3.7
Arsenic †	mg/L	<0.02
Aluminium †	mg/L	<0.06
Boron †	mg/L	<0.1
Cadmium †	mg/L	<0.001
Cobalt †	mg/L	<0.004
Chromium - ICP †	mg/L	<0.01
Copper by ICP †	mg/L	<0.01
Nickel †	mg/L	<0.01
Lithium †	mg/L	0.055
Lead †	mg/L	<0.002
Zinc †	mg/L	<0.02
Molybdenum †	mg/L	<0.004
Antimony †	mg/L	<0.004
Tin †	mg/L	<0.01
Vanadium †	mg/L	<0.02

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Moya Appleby
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Appendix to REPORT WAL031029001

Summary of Methods Used and Detection Limits

The following table gives a brief description of the methods used to conduct the analyses on this report. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis

PARAMETER	METHOD USED	DETECTION LIMIT
Alkalinity (as HCO ₃)	Auto titration method APHA 2320 - B 20th Edition 1998	5 mg/L
Boron	ICP-OES APHA 3120-B 20th Edition 1998	0.1 mg/L
Bromide	Ion Chromatography APHA 4110-B 20th Edition 1998	0.1 mg/L
Calcium	ICP-OES APHA 3120-B 20th Edition 1998	0.05 mg/L
Chloride	Ion Chromatography APHA 4110-B 20th Edition 1998	0.04 mg/L
Conductivity	Conductivity Meter APHA 2510 B 20 th Edition 1998	1.0 μS/cm
Fluoride	Ion Chromatography APHA 4110-B 20th Edition 1998	0.03 mg/L
Iron	ICP-OES APHA 3120-B 20th Edition 1998	0.02 mg/L
Magnesium	ICP-OES APHA 3120-B 20th Edition 1998	0.01 mg/L
Manganese	ICP-OES APHA 3120-B 20th Edition 1998	0.005 mg/L
Nitrate Nitrogen (as N)	Ion Chromatography APHA 4110-B 20th Edition 1998	0.03 mg/l
pH	Electrometric Method APHA 4500-H+ B 20th Edition 1998	1
Phosphorus (sol. Reactive – expr. as O-PO ₄)	Ion Chromatography APHA 4110-B 20th Edition 1998	0.05 mg/l
Potassium	Flame Emission Spectrometry APHA 3500-K B 20th Edition 1998	0.04 mg/L
Silica (as SiO ₂)	ICP-OES APHA 3120-B 20th Edition 1998	0.5 mg/L
Sodium	Flame Emission Spectrometry APHA 3500-Na B 20th Edition 1998	0.04 mg/L
Sulphate	Ion Chromatography APHA 4110-B 20th Edition 1998	0.10 mg/L

If you have any queries with regard to the above please contact the Laboratory Manager, Dr B Mountain,
ph. 07-3748211, mob. 027-220 9647, Email: b.mountain@gns.cri.nz

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PARAMETER	METHOD USED	DETECTION LIMIT
Aluminium	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.003 mg/L
Antimony	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.0002 mg/L
Arsenic	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.001 mg/L
Boron	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.005 mg/L
Cadmium	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.00005 mg/L
Chromium	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.0005 mg/L
Cobalt	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.0002 mg/L
Copper	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.0005 mg/L
Lead	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.0001 mg/L
Lithium	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.0004 mg/L
Molybdenum	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.0002 mg/L
Nickel	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.0005 mg/L
Tin	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.0005 mg/L
Vanadium	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.001 mg/L
Zinc	Nitric acid digestion, then ICP-MS APHA 3125 B 20 th Edition 1998	0.001 mg/L

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