



ANALYSIS REPORT

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Client:	Hawkes Bay Regional Council	Lab No:	1394267	SPV1
Contact:	V Lyon	Date Registered:	07-Mar-2015	
	C/- Hawkes Bay Regional Council	Date Reported:	17-Mar-2015	
	Private Bag 6006	Quote No:	66907	
	NAPIER 4142	Order No:	N41855	
		Client Reference:	Whangawehi	
		Add. Client Ref:	312-302	
		Submitted By:	V Lyon	

Sample Type: Aqueous

Sample Name:	54143 - Whangawehi Strm at Pat O'Brians-3304	54144 - Mangatupae Strm at Pat O'Brians-3303	54145 - Mamango Pongaroa S-3301	54146 - Coops Crk US Whangawehi - 3306	54147 - ReserveStrm US Whangawehi - 3307
Lab Number:	1394267.1	1394267.2	1394267.3	1394267.4	1394267.5
Individual Tests					
Escherichia coli	cfu / 100mL	19	100 #1	39	80 #1
HBRC Summer Rivers					
pH	pH Units	8.0	8.4	7.8	8.1
Total Alkalinity	g/m ³ as CaCO ₃	175	167	172	194
Carbonate	g/m ³ at 25°C	< 1.0	2.1	< 1.0	1.3
Bicarbonate	g/m ³ at 25°C	210	200	210	230
Free Carbon Dioxide	g/m ³ at 25°C	3.6	1.4	5.0	3.3
Total Hardness	g/m ³ as CaCO ₃	160	160	153	168
Total Suspended Solids	g/m ³	1.2	0.8	2.6	0.6
Dissolved Calcium	g/m ³	54	54	50	58
Dissolved Magnesium	g/m ³	6.2	5.9	6.8	5.7
Dissolved Potassium	g/m ³	4.8	1.47	5.9	4.9
Dissolved Sodium	g/m ³	57	47	53	61
Chloride	g/m ³	50	47	52	48
Total Nitrogen	g/m ³	0.30	0.21	0.47	0.21
Total Ammoniacal-N	g/m ³	< 0.010	< 0.010	< 0.010	< 0.010
Nitrite-N	g/m ³	< 0.002	< 0.002	< 0.002	< 0.002
Nitrate-N	g/m ³	0.004	< 0.002	< 0.002	< 0.002
Nitrate-N + Nitrite-N	g/m ³	0.005	< 0.002	0.002	< 0.002
Total Kjeldahl Nitrogen (TKN)	g/m ³	0.29	0.21	0.46	0.21
Dissolved Reactive Phosphorus	g/m ³	0.026	0.010	0.080	0.021
Total Phosphorus	g/m ³	0.041	0.018	0.120	0.029
Reactive Silica	g/m ³ as SiO ₂	19.3	14.4	12.6	21
Sulphate	g/m ³	33	12.8	24	34

Sample Name:	54148 - Whangawehi US Reserve Confl - 3308				
Lab Number:	1394267.6				
Individual Tests					
Escherichia coli	cfu / 100mL	170	-	-	-
HBRC Summer Rivers					
pH	pH Units	8.2	-	-	-
Total Alkalinity	g/m ³ as CaCO ₃	220	-	-	-
Carbonate	g/m ³ at 25°C	1.9	-	-	-



Sample Type: Aqueous						
Sample Name:		54148 - Whangawehi US Reserve Confl - 3308				
Lab Number:		1394267.6				
HBRC Summer Rivers						
Bicarbonate	g/m ³ at 25°C	260	-	-	-	-
Free Carbon Dioxide	g/m ³ at 25°C	2.7	-	-	-	-
Total Hardness	g/m ³ as CaCO ₃	210	-	-	-	-
Total Suspended Solids	g/m ³	1.2	-	-	-	-
Dissolved Calcium	g/m ³	74	-	-	-	-
Dissolved Magnesium	g/m ³	6.8	-	-	-	-
Dissolved Potassium	g/m ³	4.7	-	-	-	-
Dissolved Sodium	g/m ³	47	-	-	-	-
Chloride	g/m ³	42	-	-	-	-
Total Nitrogen	g/m ³	0.21	-	-	-	-
Total Ammoniacal-N	g/m ³	< 0.010	-	-	-	-
Nitrite-N	g/m ³	< 0.002	-	-	-	-
Nitrate-N	g/m ³	0.008	-	-	-	-
Nitrate-N + Nitrite-N	g/m ³	0.009	-	-	-	-
Total Kjeldahl Nitrogen (TKN)	g/m ³	0.20	-	-	-	-
Dissolved Reactive Phosphorus	g/m ³	0.048	-	-	-	-
Total Phosphorus	g/m ³	0.059	-	-	-	-
Reactive Silica	g/m ³ as SiO ₂	34	-	-	-	-
Sulphate	g/m ³	25	-	-	-	-

Analyst's Comments

Please interpret these microbiological results with caution as the age of the sample is unknown. Samples must be less than 24 hours old at the time of testing. Please record both the time and date of sampling on your submission form and the sample bottles.

#1 Statistically estimated count based on the theoretical countable range for the stated method.

SUMMARY OF METHODS

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. 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.

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
HBRC Summer Rivers		-	1-6
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter.	-	1-6
Total Kjeldahl Digestion	Sulphuric acid digestion with copper sulphate catalyst.	-	1-6
Total Phosphorus Digestion	Acid persulphate digestion.	-	1-6
pH	pH meter. APHA 4500-H+ B 22 nd ed. 2012.	0.1 pH Units	1-6
Total Alkalinity	Titration to pH 4.5 (M-alkalinity), autotitrator. APHA 2320 B (Modified for alk <20) 22 nd ed. 2012.	1.0 g/m ³ as CaCO ₃	1-6
Carbonate	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 22 nd ed. 2012.	1.0 g/m ³ at 25°C	1-6
Bicarbonate	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 22 nd ed. 2012.	1.0 g/m ³ at 25°C	1-6
Free Carbon Dioxide	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 22 nd ed. 2012.	1.0 g/m ³ at 25°C	1-6
Total Hardness	Calculation from Calcium and Magnesium. APHA 2340 B 22 nd ed. 2012.	1.0 g/m ³ as CaCO ₃	1-6
Total Suspended Solids	Filtration of a 2L sample using Whatman 934 AH, Advantec GC-50 or equivalent filters (nominal pore size 1.2 - 1.5µm), gravimetric determination. APHA 2540 D 22 nd ed. 2012.	0.5 g/m ³	1-6
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B 22 nd ed. 2012.	-	1-6
Dissolved Calcium	Filtered sample, ICP-MS, trace level. APHA 3125 B 22 nd ed. 2012.	0.05 g/m ³	1-6

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
Dissolved Magnesium	Filtered sample, ICP-MS, trace level. APHA 3125 B 22 nd ed. 2012.	0.02 g/m ³	1-6
Dissolved Potassium	Filtered sample, ICP-MS, trace level. APHA 3125 B 22 nd ed. 2012.	0.05 g/m ³	1-6
Dissolved Sodium	Filtered sample, ICP-MS, trace level. APHA 3125 B 22 nd ed. 2012.	0.02 g/m ³	1-6
Chloride	Filtered sample. Ferric thiocyanate colorimetry. Discrete Analyser. APHA 4500 Cl ⁻ E (modified from continuous flow analysis) 22 nd ed. 2012.	0.5 g/m ³	1-6
Total Nitrogen	Calculation: TKN + Nitrate-N + Nitrite-N. Please note: The Default Detection Limit of 0.05 g/m ³ is only attainable when the TKN has been determined using a trace method utilising duplicate analyses. In cases where the Detection Limit for TKN is 0.10 g/m ³ , the Default Detection Limit for Total Nitrogen will be 0.11 g/m ³ .	0.05 g/m ³	1-6
Total Ammoniacal-N	Filtered sample. Phenol/hypochlorite colorimetry. Discrete Analyser. (NH ₄ -N = NH ₄ ⁺ -N + NH ₃ -N). APHA 4500-NH ₃ F (modified from manual analysis) 22 nd ed. 2012.	0.010 g/m ³	1-6
Nitrite-N	Automated Azo dye colorimetry, Flow injection analyser. APHA 4500-NO ₃ ⁻ I 22 nd ed. 2012.	0.002 g/m ³	1-6
Nitrate-N	Calculation: (Nitrate-N + Nitrite-N) - NO ₂ N. In-House.	0.0010 g/m ³	1-6
Nitrate-N + Nitrite-N	Total oxidised nitrogen. Automated cadmium reduction, flow injection analyser. APHA 4500-NO ₃ ⁻ I 22 nd ed. 2012.	0.002 g/m ³	1-6
Total Kjeldahl Nitrogen (TKN)	Total Kjeldahl digestion, phenol/hypochlorite colorimetry. Discrete Analyser. APHA 4500-N _{org} D. (modified) 4500 NH ₃ F (modified) 22 nd ed. 2012.	0.10 g/m ³	1-6
Dissolved Reactive Phosphorus	Filtered sample. Molybdenum blue colorimetry. Discrete Analyser. APHA 4500-P E (modified from manual analysis) 22 nd ed. 2012.	0.004 g/m ³	1-6
Total Phosphorus	Total phosphorus digestion, ascorbic acid colorimetry. Discrete Analyser. APHA 4500-P B & E (modified from manual analysis) 22 nd ed. 2012. Also modified to include the use of a reductant to eliminate interference from arsenic present in the sample. NWASCA, Water & soil Miscellaneous Publication No. 38, 1982.	0.004 g/m ³	1-6
Reactive Silica	Filtered sample. Heteropoly blue colorimetry. Discrete analyser. APHA 4500-SiO ₂ F (modified from flow injection analysis) 22 nd ed. 2012.	0.10 g/m ³ as SiO ₂	1-6
Sulphate	Filtered sample. Ion Chromatography. APHA 4110 B 22 nd ed. 2012.	0.5 g/m ³	1-6
Escherichia coli	Membrane filtration, Count on mFC agar, Incubated at 44.5°C for 22 hours, MUG Confirmation. Analysed at Hill Laboratories - Microbiology; 1 Clow Place, Hamilton. APHA 9222 G, 22 nd ed. 2012.	1 cfu / 100mL	1-6

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

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