



Certificate of Analysis

Client:	Hawkes Bay Regional Council	Lab No:	1959073	SPV1
Contact:	V Lyon C/- Hawkes Bay Regional Council Private Bag 6006 Napier 4142	Date Received:	07-Apr-2018	
		Date Reported:	23-Apr-2018	
		Quote No:	78490	
		Order No:	RM192	
		Client Reference:	Whangawehi	
		Add. Client Ref:	312-302	
		Submitted By:	V Lyon	

Sample Type: Aqueous

Sample Name:	68448 - Whangawehi Strm at Pat O'Brians-3304 06-Apr-2018 12:20 pm	68449 - Mangatupae Strm at Pat O'Brians-3303 06-Apr-2018 12:30 pm	68450 - Whangawehi at George Ormonds -3301 06-Apr-2018	68452 - Reserve Stream - Trib of Whangawehi - 3307 06-Apr-2018 12:00 pm	68453 - Whangawehi US Reserve Confl - 3308 06-Apr-2018 11:15 am
Lab Number:	1959073.1	1959073.2	1959073.3	1959073.4	1959073.5

Faecal Coliforms and E. coli profile

Faecal Coliforms	cfu / 100mL	16 #1	21	36 #2	1,100 #1	210 #3
Escherichia coli	cfu / 100mL	16 #1	18	17 #2	1,100 #1	210 #3

HBRC Standard River

Volatile Suspended Solids	g/m ³	0.6	2.8	0.8	0.7	0.6
Total Suspended Solids	g/m ³	1.0	14.0	1.4	2.2	1.6
Total Nitrogen	g/m ³	0.31	0.30	0.20	0.33	0.59
Total Ammoniacal-N	g/m ³	< 0.005	< 0.005	< 0.005	0.030	0.006
Nitrite-N	g/m ³	< 0.0010	< 0.0010	< 0.0010	0.0049	0.0037
Nitrate-N	g/m ³	< 0.0010	0.0035	< 0.0010	0.151	0.27
Nitrate-N + Nitrite-N	g/m ³	< 0.0010	0.0042	< 0.0010	0.156	0.27
Total Kjeldahl Nitrogen (TKN)	g/m ³	0.31	0.29	0.20	0.17	0.32
Dissolved Reactive Phosphorus	g/m ³	0.049	0.017	0.049	0.099	0.090
Total Phosphorus	g/m ³	0.058	0.027	0.060	0.128	0.106

Sample Name:	68455 - Whangawehi DS Cattleyards - 3309 06-Apr-2018 11:00 am				
Lab Number:	1959073.6				

Faecal Coliforms and E. coli profile

Faecal Coliforms	cfu / 100mL	53 #3	-	-	-	-
Escherichia coli	cfu / 100mL	49 #3	-	-	-	-

HBRC Standard River

Volatile Suspended Solids	g/m ³	0.7	-	-	-	-
Total Suspended Solids	g/m ³	1.9	-	-	-	-
Total Nitrogen	g/m ³	0.84	-	-	-	-
Total Ammoniacal-N	g/m ³	0.009	-	-	-	-
Nitrite-N	g/m ³	0.0038	-	-	-	-
Nitrate-N	g/m ³	0.40	-	-	-	-
Nitrate-N + Nitrite-N	g/m ³	0.40	-	-	-	-
Total Kjeldahl Nitrogen (TKN)	g/m ³	0.44	-	-	-	-
Dissolved Reactive Phosphorus	g/m ³	0.078	-	-	-	-
Total Phosphorus	g/m ³	0.080	-	-	-	-



Analyst's Comments

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

#2 Please interpret this result with caution as it is not known what the sample age was on receipt at the lab. Please ensure that both sampling date and time are recorded on the submission form and sample bottle. The sample is required to be less than 24 hours at the time of testing in the lab.

#3 Please interpret this microbiological result with caution as the sample was > 24 (24-26 hours) hours old at the time of testing in the laboratory. The sample is required to reach the laboratory with sufficient time to allow testing to commence within 24 hours of sampling.

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
Individual Tests			
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
Volatile Suspended Solids	Filtration (GF/C, 1.2 µm). Ashing 550°C, 30 min. Gravimetric. APHA 2540 E (modified) 22 nd ed. 2012.	0.5 g/m 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 (modified) 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 Trace	Phenol/hypochlorite colorimetry. Flow injection analyser. (NH ₄ -N = NH ₄ ⁺ -N + NH ₃ -N). APHA 4500-NH ₃ H 22 nd ed. 2012.	0.005 g/m ³	1-6
Nitrite-N Trace	Automated Azo dye colorimetry, Flow injection analyser. APHA 4500-NO ₂ -I 22 nd ed. 2012 (modified).	0.0010 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 Trace	Total oxidised nitrogen. Automated cadmium reduction, flow injection analyser. APHA 4500-NO ₃ -I 22 nd ed. 2012 (modified).	0.0010 g/m ³	1-6
Total Kjeldahl Nitrogen (TKN)	Total Kjeldahl digestion, phenol/hypochlorite colorimetry. Discrete Analyser. APHA 4500-Norg 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 colourimetry. Flow injection analyser. APHA 4500-P G (modified). 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. NAWASCO, Water & soil Miscellaneous Publication No. 38, 1982.	0.004 g/m ³	1-6
HBRC Standard River		0.0010 - 0.5 g/m ³	1-6
Faecal Coliforms and E. coli profile			
Faecal Coliforms	Membrane Filtration, Count on mFC agar, Incubated at 44.5°C for 22 hours, Confirmation. APHA 9222 D, 22 nd ed. 2012.	1 cfu / 100mL	1-6
Escherichia coli	Membrane filtration, Count on mFC agar, Incubated at 44.5°C for 22 hours, MUG Confirmation. 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.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

A handwritten signature in blue ink, consisting of several overlapping, stylized strokes that form a unique, illegible mark.

Ara Heron BSc (Tech)
Client Services Manager - Environmental