



Certificate of Analysis

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Client:	Hawkes Bay Regional Council	Lab No:	2192087	SPv1
Contact:	Ariana Mackay	Date Received:	13-Jun-2019	
	C/- Hawkes Bay Regional Council	Date Reported:	18-Jun-2019	
	Private Bag 6006	Quote No:	78490	
	Napier 4142	Order No:	RM228	
		Client Reference:	Whangawehi	
		Add. Client Ref:	312-302	
		Submitted By:	Ariana Mackay	

Sample Type: Aqueous

Sample Name:	72962 - Whangawehi Strm at Pat O'Brians-3304 12-Jun-2019 12:12 pm	72963 - Mangatupae Strm at Pat O'Brians-3303 12-Jun-2019 12:10 pm	72964 - Whangawehi at George Ormonds -3301 12-Jun-2019 1:00 pm	72965 - Coops - Trib of Whangawehi - 3306 12-Jun-2019 11:51 am	72966 - Reserve Stream - Trib of Whangawehi - 3307 12-Jun-2019 11:42 am
Lab Number:	2192087.1	2192087.2	2192087.3	2192087.4	2192087.5

Individual Tests

Turbidity	NTU	1.45	2.1	2.1	0.41	3.1
Turbidity ISO	FNU	1.30	0.71	2.1	0.40	2.7

Faecal Coliforms and E. coli profile

Faecal Coliforms	cfu / 100mL	20 #1	20 #1	70 #1	10 #1	80 #1
Escherichia coli	cfu / 100mL	10 #1	20 #1	30 #1	10 #1	80 #1

HBRC Standard River

pH	pH Units	8.1	7.9	8.1	8.3	8.3
Volatile Suspended Solids	g/m ³	0.6	1.3	0.6	0.9	0.8
Total Suspended Solids	g/m ³	1.2	9.5	1.7	4.0	3.2
Total Nitrogen	g/m ³	0.24	0.20	0.30	0.15	0.24
Total Ammoniacal-N	g/m ³	0.008	< 0.005	< 0.005	< 0.005	< 0.005
Nitrite-N	g/m ³	0.0015	< 0.0010	< 0.0010	< 0.0010	0.0012
Nitrate-N	g/m ³	0.052	0.027	0.0010	0.0096	0.046
Nitrate-N + Nitrite-N	g/m ³	0.053	0.028	0.0019	0.0100	0.047
Total Kjeldahl Nitrogen (TKN)	g/m ³	0.19	0.18	0.30	0.14	0.19
Dissolved Reactive Phosphorus	g/m ³	0.037	0.021	0.030	0.032	0.057
Total Phosphorus	g/m ³	0.048	0.030	0.046	0.036	0.098

Sample Name:	72967 - Whangawehi US Reserve Confl - 3308 12-Jun-2019 11:40 am	72968 - Whangawehi DS Cattleyards - 3309 12-Jun-2019 11:20 am	72969 - Taiporutu Stream at Mo - 4308 12-Jun-2019 2:10 pm		
Lab Number:	2192087.6	2192087.7	2192087.8		

Individual Tests

Turbidity	NTU	1.60	0.78	2.3	-	-
Turbidity ISO	FNU	1.71	0.51	2.6	-	-

Faecal Coliforms and E. coli profile

Faecal Coliforms	cfu / 100mL	130 #1	110 #1	40 #1	-	-
Escherichia coli	cfu / 100mL	120 #1	90 #1	40 #1	-	-

HBRC Standard River

pH	pH Units	8.0	7.9	8.7	-	-
Volatile Suspended Solids	g/m ³	1.2	< 0.5	1.4	-	-
Total Suspended Solids	g/m ³	3.8	0.6	5.8	-	-
Total Nitrogen	g/m ³	0.64	0.51	0.25	-	-



Sample Type: Aqueous						
Sample Name:		72967 - Whangawehi US Reserve Confl - 3308 12-Jun-2019 11:40 am	72968 - Whangawehi DS Cattleyards - 3309 12-Jun-2019 11:20 am	72969 - Taiporutu Stream at Mo - 4308 12-Jun-2019 2:10 pm		
Lab Number:		2192087.6	2192087.7	2192087.8		
HBRC Standard River						
Total Ammoniacal-N	g/m ³	0.010	0.012	< 0.005	-	-
Nitrite-N	g/m ³	0.0015	0.0015	< 0.0010	-	-
Nitrate-N	g/m ³	0.35	0.143	< 0.0010	-	-
Nitrate-N + Nitrite-N	g/m ³	0.35	0.145	< 0.0010	-	-
Total Kjeldahl Nitrogen (TKN)	g/m ³	0.29	0.36	0.25	-	-
Dissolved Reactive Phosphorus	g/m ³	0.066	0.038	0.0037	-	-
Total Phosphorus	g/m ³	0.078	0.044	0.014	-	-

Analyst's Comments

#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. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter.	-	1-8
Turbidity	Analysis using a Hach 2100N, Turbidity meter. APHA 2130 B 23 rd ed. 2017.	0.05 NTU	1-8
Turbidity - ISO 7027 Method	Analysis using a Hach 2100N IS, Turbidity meter. ISO 7027:1999(E) (modified).	0.05 FNU	1-8
pH	pH meter. APHA 4500-H ⁺ B 23 rd ed. 2017. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used.	0.1 pH Units	1-8
Volatile Suspended Solids	Filtration (GF/C, 1.2 µm). Ashing 550°C, 30 min. Gravimetric. APHA 2540 E (modified) 23 rd ed. 2017.	0.5 g/m ³	1-8
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) 23 rd ed. 2017.	0.5 g/m ³	1-8
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	1-8
Total Ammoniacal-N Trace	Phenol/hypochlorite colorimetry. Flow injection analyser. (NH ₄ -N = NH ₄ ⁺ -N + NH ₃ -N). APHA 4500-NH ₃ H 23 rd ed. 2017.	0.005 g/m ³	1-8
Nitrite-N Trace	Automated Azo dye colorimetry, Flow injection analyser. APHA 4500-NO ₃ ⁻ I (modified) 23 rd ed. 2017.	0.0010 g/m ³	1-8
Nitrate-N	Calculation: (Nitrate-N + Nitrite-N) - NO ₂ N. In-House.	0.0010 g/m ³	1-8
Nitrate-N + Nitrite-N Trace	Total oxidised nitrogen. Automated cadmium reduction, flow injection analyser. APHA 4500-NO ₃ ⁻ I (modified) 23 rd ed. 2017.	0.0010 g/m ³	1-8
Total Kjeldahl Nitrogen (TKN)	Total Kjeldahl digestion, phenol/hypochlorite colorimetry. Discrete Analyser. APHA 4500-N _{org} D (modified) 4500 NH ₃ F (modified) 23 rd ed. 2017.	0.10 g/m ³	1-8
Dissolved Reactive Phosphorus (trace)	Filtered sample. Molybdenum blue colorimetry. Flow injection analyser. APHA 4500-P G 23 rd ed. 2017.	0.0010 g/m ³	1-8
Total Phosphorus	Total phosphorus digestion, ascorbic acid colorimetry. Discrete Analyser. APHA 4500-P B & E (modified from manual analysis and also modified to include a reductant to reduce interference from any arsenic present in the sample) 23 rd ed. 2017. NWASCO, Water & soil Miscellaneous Publication No. 38, 1982.	0.004 g/m ³	1-8
HBRC Standard River		-	1-8

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
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 23 rd ed. 2017.	1 cfu / 100mL	1-8
Escherichia coli	Membrane filtration, Count on mFC agar, Incubated at 44.5°C for 22 hours, MUG Confirmation. APHA 9222 G 23 rd ed. 2017.	1 cfu / 100mL	1-8

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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Ara Heron BSc (Tech)
Client Services Manager - Environmental