



Certificate of Analysis

Client:	Hawkes Bay Regional Council	Lab No:	2121860	SPV1
Contact:	Ariana Mackay C/- Hawkes Bay Regional Council Private Bag 6006 Napier 4142	Date Received:	09-Feb-2019	
		Date Reported:	18-Feb-2019	
		Quote No:	78490	
		Order No:	RM144	
		Client Reference:	Whangawehi	
		Add. Client Ref:	312-302	
		Submitted By:	Ariana Mackay	

Sample Type: Aqueous

Sample Name:	70956 - Mangatupae Stream @ Pat O'Brians - 3303				
Lab Number:	2121860.1				

Individual Tests

Turbidity	NTU	0.61	-	-	-	-
Turbidity ISO	FNU	0.54	-	-	-	-
Faecal Coliforms and E. coli profile						
Faecal Coliforms	cfu / 100mL	20 #2	-	-	-	-
Escherichia coli	cfu / 100mL	20 #2	-	-	-	-
HBRC Standard River						
pH	pH Units	7.8	-	-	-	-
Volatile Suspended Solids	g/m ³	1.0 #1	-	-	-	-
Total Suspended Solids	g/m ³	0.9	-	-	-	-
Total Nitrogen	g/m ³	0.32	-	-	-	-
Total Ammoniacal-N	g/m ³	< 0.005	-	-	-	-
Nitrite-N	g/m ³	< 0.0010	-	-	-	-
Nitrate-N	g/m ³	< 0.0010	-	-	-	-
Nitrate-N + Nitrite-N	g/m ³	< 0.0010	-	-	-	-
Total Kjeldahl Nitrogen (TKN)	g/m ³	0.32	-	-	-	-
Dissolved Reactive Phosphorus	g/m ³	0.103	-	-	-	-
Total Phosphorus	g/m ³	0.114	-	-	-	-

Analyst's Comments

#1 It has been noted that the result for Volatile Suspended Solids Low was greater than that for Total Suspended Solids Low, but within the analytical variation of these methods.

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

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
Turbidity	Analysis using a Hach 2100N, Turbidity meter. APHA 2130 B 23 rd ed. 2017.	0.05 NTU	1



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked *, which are not accredited.

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
Turbidity - ISO 7027 Method	Analysis using a Hach 2100N IS, Turbidity meter. ISO 7027:1999(E) (modified).	0.05 FNU	1
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
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
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
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
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
Nitrite-N Trace	Automated Azo dye colorimetry, Flow injection analyser. APHA 4500-NO ₂ -I (modified) 23 rd ed. 2017.	0.0010 g/m ³	1
Nitrate-N	Calculation: (Nitrate-N + Nitrite-N) - NO ₂ N. In-House.	0.0010 g/m ³	1
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
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
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
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
HBRC Standard River		-	1
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
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

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