

Certificate of Analysis

Laboratory Reference:230301-005

Attention:	Lab Certificates	Final Report:	499896-0
Client:	NORTHLAND REGIONAL COUNCIL	Report Issue Date:	10-Mar-2023
Address:	PO Box 9021, WHANGAREI, 148	Received Date:	02-Mar-2023
Client Reference:	SOE-Kerikeri Lakes - Manuwai	Laboratory Activity Dates:	02-Mar-2023 - 09-Mar-2023
Purchase Order:	0467501	Quote Reference :	976

Sample Details

	WATERS	WATERS	WATERS
Lab Sample ID:	230301-005-1	230301-005-2	230301-005-3
Client Sample ID:	20231211	20231212	20231213
Sample Date/Time	01/03/2023 10:35	01/03/2023 10:35	01/03/2023 09:30
Description:	Lake Manuwai at Surface intake	Lake Manuwai at Bottom (13m) intake point	Lake Manuwai Weir at Ironbark Road

Sample Parameters and Field Testing

Laboratory Arrival Date	02/03/2023	02/03/2023	02/03/2023
Laboratory Arrival Temperature °C	3.5	3.5	3.5
Laboratory Arrival Time	07:40 AM	07:40 AM	07:40 AM

General Testing

Ammoniacal Nitrogen (as N)	mg/L	0.029 ± 0.0019	0.02 ± 0.0013	0.008 ± 0.00054
Chlorophyll A	mg/L	0.015	-	<0.0006
Dissolved Reactive Phosphorus (as P)	mg/L	0.002 ± 0.00013	<0.002	0.002 ± 0.00013
Total Kjeldahl Nitrogen (as N)	mg/L	0.517 ± 0.039	0.286 ± 0.021	0.159 ± 0.012
Total Nitrogen by Calc (as N)	mg/L	0.52	0.29	0.26
Total Oxidised Nitrogen (as N)	mg/L	0.0052	0.0035	0.1
Total Phosphorus (as P)	mg/L	0.012 ± 0.0012	0.01 ± 0.001	0.011 ± 0.0011
Total Suspended Solids	mg/L	3.6 ± 0.4	3.0 ± 0.33	1.6 ± 0.18

Metals

Total Metals by ICP-MS—Trace (Default Digest)

Iron (Total)	mg/L	0.41 ± 0.083	0.51 ± 0.1	0.72 ± 0.15
Manganese (Total)	mg/L	0.019 ± 0.0032	0.061 ± 0.01	0.0088 ± 0.0015

Microbiology

Faecal coliforms by Membrane Filtration

Faecal coliforms	cfu/100 mL	3.3	-	830
------------------	------------	-----	---	-----

Results marked with * are not accredited to International Accreditation New Zealand. A dash indicates no test performed.

Where samples have been supplied by the client, they are tested as received.

The results of analysis contained in this report relate only to the sample(s) tested. Where sample collection was performed by the laboratory, the results of analysis contained in this report relate only to the sample(s) collected.

Reference Methods

The sample(s) referred to in this report were analysed by the following method(s)

Analyte	Method Reference	MDL	Samples	Location
Sample Parameters and Field Testing				
Laboratory Arrival Date	APHA (online edition) 2550 B (temperature) or In-house methods (date and time)		All	Auckland
Laboratory Arrival Temperature	APHA (online edition) 2550 B (temperature) or In-house methods (date and time)		All	Auckland
Laboratory Arrival Time	APHA (online edition) 2550 B (temperature) or In-house methods (date and time)		All	Auckland
General Testing				
Ammoniacal Nitrogen (as N) by Colorimetry/Discrete Analyser	HMSO (1981) ISBN 0117516139	0.005 mg/L	All	Auckland



Queenstown

74 Glenda Drive, Frankton, Queenstown, 9300
 T: (03) 409 0559

Invercargill

142 Esk Street, Invercargill, 9810
 T: (03) 214 4040

General Testing					
Chlorophyll A by Aqueous Acetone Extraction and Spectrophotometry	APHA (online edition) 10200 H	0.0006 mg/L	1, 3	Auckland	
Dissolved Reactive Phosphorus (as P) by Colorimetry/Discrete Analyser	APHA (online edition) 4500-P F	0.002 mg/L	All	Auckland	
Total Kjeldahl Nitrogen (as N) by Sulphuric Acid Digestion (with mercury catalyst) and Colorimetry/Discrete Analyser	APHA (online edition) 4500-N org	0.1 mg/L	All	Auckland	
Total Nitrogen by Calc (as N)	Calculation		All	Auckland	
Total Oxidised Nitrogen (as N) by Automated Cadmium Reduction/Flow Analysis (0.45 µm Filtered)	APHA (online edition) 4500-NO3 I	0.002 mg/L	All	Auckland	
Total Phosphorus (as P) by Persulphate Digestion and Colorimetry/Discrete Analyser	APHA (online edition) 4500-P J (modified) (Discrete Analyser)	0.004 mg/L	All	Auckland	
Total Suspended Solids by Gravimetry	APHA (online edition) 2540 D / 2540 E	0.2 mg/L	All	Auckland	
Metals					
Total Metals by ICP-MS—Trace (Default Digest)					
Iron (Total)	APHA (online edition) 3125 B by ICPMS	0.002 mg/L	All	Auckland	
Manganese (Total)	APHA (online edition) 3125 B by ICPMS	0.0005 mg/L	All	Auckland	
Microbiology					
Faecal coliforms by Membrane Filtration					
Faecal coliforms	APHA (online edition) 9222 D	1 cfu/100 mL	1, 3	Auckland	
Preparations					
Digest for Total Metals in Liquids	APHA 3030E Modified (4:1 Nitric:Hydrochloric Acid: 95°C 2 hours)		All	Auckland	
Membrane Filtration (0.45 µm)	APHA (online edition) 4500-P B (preliminary filtration)		All	Auckland	
<i>The method detection limit (MDL) listed is the limit attainable in a relatively clean matrix. If dilutions are required for analysis the detection limit may be higher. For more information please contact the Compliance and Projects Manager.</i>					

Samples, with suitable preservation and stability of analytes, will be held by the laboratory for a period of two weeks after results have been reported, unless otherwise advised by the submitter.

Watercare Laboratory Services is a division of Watercare Services Limited .

This report may not be reproduced, except in full, without the written authority of the Compliance and Projects Manager.



Chandra Sharma
KTP Signatory



Anel Du Preez
KTP Signatory



Marina Fisher
KTP Signatory



Tim Richards
KTP - Sampling



Queenstown
74 Glenda Drive, Frankton, Queenstown, 9300
T: (03) 409 0559

Invercargill
142 Esk Street, Invercargill, 9810
T: (03) 214 4040