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Certificate of Analysis
Laboratory Reference:201015-006

Attention:	Jennifer Mcgirr	*Final Report:*	**394384-0**
Client:	**QUEENSTOWN LAKE DISTRICT COUNC**	*Report Issue Date:*	**11-Jan-2021**
Address:	**PO Box 50072, Queenstown, 9348**	*Received Date:*	**19-Oct-2020**
		Sampled By:	**CB**
Client Reference:	**DWS Luggate**		
Purchase Order:	**P0037114**	*Quote Reference :*	**12473**

Sample Details		WATERS
Lab Sample ID:		**201015-006-1**
Client Sample ID:		
Sample Date/Time		19/10/2020
Description:		Luggate - Raw Intake
Micro Summary View		
Escherichia coli (Colilert-18)	MPN/100 mL	<1.0
Total Coliforms (Colilert-18)	MPN/100 mL	<1.0
Chemistry Detailed		
Anions		
Chloride	mg/L	2.32
Fluoride	mg/L	0.073
Nitrate (as N)	mg/L	1.9
Nitrite (as N)	mg/L	<0.002
Sulphate	mg/L	3.4
Oxygenated Halides/Bromide		
Bromate	mg/L	<0.005
Bromide	mg/L	0.0092
Chlorate	mg/L	<0.01
Chlorite	mg/L	<0.005
Sample Parameters and Field Testing		
Residual Free Chlorine (as Cl2)	mg/L	0.04
Temperature	°C	12.5
General Testing		
Ammoniacal Nitrogen (as N)	mg/L	<0.005
Conductivity (at 25 °C)	mS/m	11.3
Cyanogen Chloride	mg/L	<0.005 *
Dissolved Sulfide	mg/L	<0.1 *
Nitrite (as N) + Nitrate (as N)	mg/L	1.9
pH (at room temp c. 20 °C)	pH unit	6.6
Total Cyanide	mg/L	<0.005
Total Dissolved Solids	mg/L	86
Total Solids	mg/L	100
Turbidity	NTU	0.20
Un-ionised Hydrogen Sulfide	mg/L	<0.1 *
Metals		
Total Metals by ICP-MS—Trace (Default Digest)		
Aluminium (Total)	mg/L	<0.005
Antimony (Total)	mg/L	<0.001
Arsenic (Total)	mg/L	0.0014
Barium (Total)	mg/L	0.0062
Boron (Total)	mg/L	<0.005
Cadmium (Total)	mg/L	<0.00005
Calcium (Total)	mg/L	12
Chromium (Total)	mg/L	<0.0005

Sample Details (continued)

WATERS

Lab Sample ID:	**201015-006-1**
Client Sample ID:	
Sample Date/Time:	19/10/2020
Description:	Luggate - Raw Intake

Metals

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

Copper (Total)	mg/L	0.0026
Iron (Total)	mg/L	0.01
Lead (Total)	mg/L	0.00016
Magnesium (Total)	mg/L	2.2
Manganese (Total)	mg/L	0.0025
Mercury (Total)	mg/L	<0.00005
Molybdenum (Total)	mg/L	<0.0003
Nickel (Total)	mg/L	0.00015
Potassium (Total)	mg/L	0.77
Selenium (Total)	mg/L	<0.0005
Sodium (Total)	mg/L	5.6
Total Hardness (as CaCO3)	mg/L	38
Uranium (Total)	mg/L	0.000023
Zinc (Total)	mg/L	0.0024

*Results marked with * are not accredited to International Accreditation New Zealand*

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. A dash indicates no test performed.

Reference Methods

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

Analyte	Method Reference	MDL	Samples	Location
Micro Summary View				
Escherichia coli (Colilert-18)	APHA (online edition) 9223 B Colilert Quantitray	1 MPN/100 mL	All	Queenstown
Total Coliforms (Colilert-18)	APHA (online edition) 9223 B Colilert Quantitray	1 MPN/100 mL	All	Queenstown
Chemistry Detailed				
Anions				
Chloride	APHA (online edition) 4110 B	0.02 mg/L	All	Auckland
Fluoride	APHA (online edition) 4110 B	0.02 mg/L	All	Auckland
Nitrate (as N)	APHA (online edition) 4110 B	0.002 mg/L	All	Auckland
Nitrite (as N)	APHA (online edition) 4110 B	0.002 mg/L	All	Auckland
Sulphate	APHA (online edition) 4110 B	0.02 mg/L	All	Auckland
Oxygenated Halides/Bromide				
Bromate	USEPA 300.0 (modified)	0.005 mg/L	All	Auckland
Bromide	USEPA 300.0 (modified)	0.005 mg/L	All	Auckland
Chlorate	USEPA 300.0 (modified)	0.010 mg/L	All	Auckland
Chlorite	USEPA 300.0 (modified)	0.005 mg/L	All	Auckland
Sample Parameters and Field Testing				
Residual Free Chlorine (as Cl2)	APHA (online edition) 4500-Cl G	0.02 mg/L	All	Queenstown
Temperature	APHA (online edition) 2550 B	°C	All	Queenstown
General Testing				
Ammoniacal Nitrogen (as N) by Flow Analysis	APHA (online edition) 4500-NH3 H	0.005 mg/L	All	Auckland
Conductivity (at 25 °C) by Electrode	APHA (online edition) 2510 B	0.5 mS/m	All	Auckland
Cyanogen Chloride by Spectrophotometry	APHA (online edition) 4500-CN J	0.005 mg/L	All	Auckland
Dissolved Sulfide by Colour Comparison (Methylene Blue Method)	APHA (online edition) 4500-S2 B (modified) & D	0.1 mg/L	All	Auckland
Nitrite (as N) + Nitrate (as N)	Calculation	0.001 mg/L	All	Auckland
pH (at room temp c. 20 °C) by Electrode	APHA (online edition) 4500-H B (Tested beyond 15 minute APHA holding time)	0.1 pH unit	All	Auckland
Total Cyanide by Distillation and Colorimetry/Discrete Analyser	APHA (online edition) 4500-CN C & E (modified)	0.005 mg/L	All	Auckland
Total Dissolved Solids by Gravimetry	APHA (online edition) 2540 C (Modified: Dried at 103 - 105 ºC)	15 mg/L	All	Auckland
Total Solids by Gravimetry	APHA (online edition) 2540 B	15 mg/L	All	Auckland
Turbidity by Nephelometry	APHA (online edition) 2130 B (modified)	0.1 NTU	All	Queenstown

General Testing				
Un-ionised Hydrogen Sulfide by Calculation	APHA (online edition) 4500-S2 H	0.1 mg/L	All	Auckland
Metals				
Total Metals by ICP-MS—Trace (Default Digest)				
Aluminium (Total)	APHA (online edition) 3125 B by ICPMS	0.005 mg/L	All	Auckland
Antimony (Total)	APHA (online edition) 3125 B by ICPMS	0.001 mg/L	All	Auckland
Arsenic (Total)	APHA (online edition) 3125 B by ICPMS	0.00010 mg/L	All	Auckland
Barium (Total)	APHA (online edition) 3125 B by ICPMS	0.0002 mg/L	All	Auckland
Boron (Total)	APHA (online edition) 3125 B by ICPMS	0.005 mg/L	All	Auckland
Cadmium (Total)	APHA (online edition) 3125 B by ICPMS	0.00005 mg/L	All	Auckland
Calcium (Total)	APHA (online edition) 3125 B by ICPMS	0.010 mg/L	All	Auckland
Chromium (Total)	APHA (online edition) 3125 B by ICPMS	0.0005 mg/L	All	Auckland
Copper (Total)	APHA (online edition) 3125 B by ICPMS	0.0002 mg/L	All	Auckland
Iron (Total)	APHA (online edition) 3125 B by ICPMS	0.002 mg/L	All	Auckland
Lead (Total)	APHA (online edition) 3125 B by ICPMS	0.00010 mg/L	All	Auckland
Magnesium (Total)	APHA (online edition) 3125 B by ICPMS	0.001 mg/L	All	Auckland
Manganese (Total)	APHA (online edition) 3125 B by ICPMS	0.0005 mg/L	All	Auckland
Mercury (Total)	APHA (online edition) 3125 B by ICPMS	0.00005 mg/L	All	Auckland
Molybdenum (Total)	APHA (online edition) 3125 B by ICPMS	0.0003 mg/L	All	Auckland
Nickel (Total)	APHA (online edition) 3125 B by ICPMS	0.00010 mg/L	All	Auckland
Potassium (Total)	APHA (online edition) 3125 B by ICPMS	0.05 mg/L	All	Auckland
Selenium (Total)	APHA (online edition) 3125 B by ICPMS	0.0005 mg/L	All	Auckland
Sodium (Total)	APHA (online edition) 3125 B by ICPMS	0.1 mg/L	All	Auckland
Total Hardness (as CaCO3)	APHA (online edition) 3125 B by ICPMS	0.03 mg/L	All	Auckland
Uranium (Total)	APHA (online edition) 3125 B by ICPMS	0.000010 mg/L	All	Auckland
Zinc (Total)	APHA (online edition) 3125 B by ICPMS	0.001 mg/L	All	Auckland
Preparations				
Digest for Total Metals in Liquids	In House (4:1 Nitric:Hydrochloric Acid, 95°C 2 hours)		All	Auckland
Glass Fibre Filtration (1.2 µm)	APHA (online edition) 2540 C (Filtration)		All	Auckland
Membrane Filtration (0.45 µm)	APHA (online edition) 4500-P B (preliminary filtration)		All	Auckland

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 Operations Manager.

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 .

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KTP Signatory

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