

Certificate of Analysis

Laboratory Reference:201022-001

Attention: Jennifer McGirr
Client: QUEENSTOWN LAKE DISTRICT COUNC
Address: PO Box 50072, Queenstown, 9348

Client Reference: DWS Wanaka Airport
Purchase Order: P0037114

Final Report: 389934-0
Report Issue Date: 03-Dec-2020
Received Date: 05-Nov-2020
Sampled By: cs

Quote Reference : 12476

Sample Details

WATERS

Lab Sample ID: 201022-001-1
Client Sample ID:
Sample Date/Time: 04/11/2020 11:03
Description: Wanaka Airport - 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 | 2.15 |
| Fluoride | mg/L | 0.1 |
| Nitrate (as N) | mg/L | 3.23 |
| Nitrite (as N) | mg/L | <0.002 |
| Sulphate | mg/L | 5.59 |

Oxygenated Halides/Bromide

| | | |
|----------|------|--------|
| Bromate | mg/L | <0.005 |
| Bromide | mg/L | 0.0076 |
| Chlorate | mg/L | <0.01 |
| Chlorite | mg/L | <0.005 |

Sample Parameters and Field Testing

| | | |
|--|------|--------|
| Monochloramine | mg/L | 0.08 * |
| Residual Free Chlorine (as Cl ₂) | mg/L | 0.02 |
| Temperature | °C | 12.8 |

General Testing

| | | |
|---------------------------------|---------|----------|
| Ammoniacal Nitrogen (as N) | mg/L | 0.041 |
| Conductivity (at 25 °C) | mS/m | 31.6 |
| Cyanogen Chloride | mg/L | <0.005 * |
| Dissolved Sulfide | mg/L | <0.1 * |
| Nitrite (as N) + Nitrate (as N) | mg/L | 3.2 |
| pH (at room temp c. 20 °C) | pH unit | 7.5 |
| Total Cyanide | mg/L | <0.005 |
| Total Dissolved Solids | mg/L | 180 |
| Total Solids | mg/L | 180 |
| Turbidity | NTU | 0.25 |
| 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 | 0.00078 |
| Barium (Total) | mg/L | 0.0085 |
| Boron (Total) | mg/L | <0.005 |
| Cadmium (Total) | mg/L | <0.00005 |



| Sample Details (continued) | | WATERS | |
|----------------------------|--|-----------------------------|--|
| Lab Sample ID: | | 201022-001-1 | |
| Client Sample ID: | | | |
| Sample Date/Time: | | 04/11/2020 11:03 | |
| Description: | | Wanaka Airport - Raw Intake | |

Metals

| Total Metals by ICP-MS—Trace (Default Digest) | | | |
|---|------|----------|--|
| Calcium (Total) | mg/L | 49 | |
| Chromium (Total) | mg/L | 0.00053 | |
| Copper (Total) | mg/L | 0.003 | |
| Iron (Total) | mg/L | <0.002 | |
| Lead (Total) | mg/L | 0.0012 | |
| Magnesium (Total) | mg/L | 3.9 | |
| Manganese (Total) | mg/L | <0.0005 | |
| Mercury (Total) | mg/L | <0.00005 | |
| Molybdenum (Total) | mg/L | <0.0003 | |
| Nickel (Total) | mg/L | <0.0001 | |
| Potassium (Total) | mg/L | 1.0 | |
| Selenium (Total) | mg/L | <0.0005 | |
| Sodium (Total) | mg/L | 3.5 | |
| Total Hardness (as CaCO3) | mg/L | 140 | |
| Uranium (Total) | mg/L | 0.00048 | |
| Zinc (Total) | mg/L | 0.0036 | |

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 | | | | |
|--|---------------------------------|-----------|-----|------------|
| Monochloramine | APHA (online edition) 4500-Cl G | 0.02 mg/L | All | Auckland |
| 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 |

General Testing

| | | | | |
|--|--|----------|-----|------------|
| Total Dissolved Solids by Gravimetry | APHA (online edition) 2540 C (Modified: Dried at 103 - 105 °C) | 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 |
| 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 CaCO ₃) | 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.

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