



Certificate of Analysis

Client:	Oravida Waters Limited	Lab No:	2441913	SPV1
Contact:	Sunel Davies C/- Oravida Waters Limited PO Box 106123 Auckland 1010	Date Received:	22-Sep-2020	
		Date Reported:	28-Sep-2020	
		Quote No:	107348	
		Order No:		
		Client Reference:	OWL Typical analysis	
		Submitted By:	Sunel Davies	

Sample Type: Aqueous

Sample Name:	OWL Typical Analysis				
	18-Sep-2020				
Lab Number:	2441913.1				

Individual Tests

pH	pH Units	7.2	-	-	-	-
Total Alkalinity	g/m ³ as CaCO ₃	33	-	-	-	-
Carbonate	g/m ³ at 25°C	< 1.0	-	-	-	-
Bicarbonate	g/m ³ at 25°C	40	-	-	-	-
Total Hardness	g/m ³ as CaCO ₃	13.2	-	-	-	-
Total Dissolved Solids (TDS)	g/m ³	136	-	-	-	-
Calcium	g/m ³	2.8	-	-	-	-
Magnesium	g/m ³	1.50	-	-	-	-
Potassium	g/m ³	2.7	-	-	-	-
Sodium	g/m ³	12.2	-	-	-	-
Chloride	g/m ³	7.9	-	-	-	-
Silicon	g/m ³	43	-	-	-	-
Nitrite-N	g/m ³	< 0.002	-	-	-	-
Nitrate-N	g/m ³	< 0.002	-	-	-	-
Nitrate-N + Nitrite-N	g/m ³	< 0.002	-	-	-	-
Reactive Silica	g/m ³ as SiO ₂	93	-	-	-	-
Sulphate	g/m ³	< 0.5	-	-	-	-
Heterotrophic Plate Count 22°C (72 hrs)	cfu / mL	< 1 #2	-	-	-	-
Total Coliforms and E.coli						
Escherichia coli	MPN / 100mL	< 1 #1	-	-	-	-
Total Coliforms	MPN / 100mL	< 1 #1	-	-	-	-

Analyst's Comments

#1 Please interpret this microbiological result with caution as the sample was >24 hours old on receipt at the lab. The sample is required to reach the laboratory with sufficient time to allow testing to commence within 24 hours of sampling. Please interpret this result with caution as the sample was > 10 °C on receipt at the lab. The sample temperature is recommended by the laboratory's reference methods to be less than 10 °C on receipt at the laboratory (but not frozen). However, it is acknowledged that samples that are transported quickly to the laboratory after sampling, may not have been cooled to this temperature.

#2 Statistically estimated count based on the theoretical countable range for the stated method. Please interpret this microbiological result with caution as the sample was >24 hours old on receipt at the lab. The sample is required to reach the laboratory with sufficient time to allow testing to commence within 24 hours of sampling. Please interpret this result with caution as the sample was > 10 °C on receipt at the lab. The sample temperature is recommended by the laboratory's reference methods to be less than 10 °C on receipt at the laboratory (but not frozen). However, it is acknowledged that samples that are transported quickly to the laboratory after sampling, may not have been cooled to this temperature.



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 simple 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. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. 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			
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
Total Alkalinity	Titration to pH 4.5 (M-alkalinity), autotitrator. APHA 2320 B (modified for Alkalinity <20) 23 rd ed. 2017.	1.0 g/m ³ as CaCO ₃	1
Carbonate	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 23 rd ed. 2017.	1.0 g/m ³ at 25°C	1
Bicarbonate	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 23 rd ed. 2017.	1.0 g/m ³ at 25°C	1
Total Hardness	Calculation: from Ca and Mg. APHA 2340 B 23 rd ed. 2017.	1.0 g/m ³ as CaCO ₃	1
Total Dissolved Solids (TDS)	Filtration through GF/C (1.2 µm), gravimetric. APHA 2540 C (modified; drying temperature of 103 - 105°C used rather than 180 ± 2°C) 23 rd ed. 2017.	10 g/m ³	1
Calcium	Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017.	0.05 g/m ³	1
Magnesium	Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017.	0.02 g/m ³	1
Potassium	Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017.	0.05 g/m ³	1
Sodium	Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017.	0.02 g/m ³	1
Chloride	Filtered sample. Ion Chromatography. APHA 4110 B (modified) 23 rd ed. 2017.	0.5 g/m ³	1
Silicon	Analysed as received (filtration, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017.	0.005 g/m ³	1
Nitrite-N	Automated Azo dye colorimetry, Flow injection analyser. APHA 4500-NO ₂ ⁻ I (modified) 23 rd ed. 2017.	0.002 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	Total oxidised nitrogen. Automated cadmium reduction, flow injection analyser. APHA 4500-NO ₃ ⁻ I (modified) 23 rd ed. 2017.	0.002 g/m ³	1
Reactive Silica	Filtered sample. Heteropoly blue colorimetry. Discrete analyser. APHA 4500-SiO ₂ F (modified from flow injection analysis) 23 rd ed. 2017.	0.10 g/m ³ as SiO ₂	1
Sulphate	Filtered sample. Ion Chromatography. APHA 4110 B (modified) 23 rd ed. 2017.	0.5 g/m ³	1
Heterotrophic Plate Count 22°C (72 hrs)	Count on Plate count agar, Incubated at 22°C for 72 hours. APHA 9215 B 23 rd ed. 2017.	1 cfu / mL	1
Total Coliforms and E.coli			
Escherichia coli	MPN count using Colilert (Incubated at 35°C for 24 hours), or Colilert 18 (Incubated at 35°C for 18 hours). APHA 9223 B 23 rd ed. 2017.	1 MPN / 100mL	1
Total Coliforms	MPN count using Colilert (Incubated at 35°C for 24 hours), or Colilert 18 (Incubated at 35°C for 18 hours). APHA 9223 B 23 rd ed. 2017.	1 MPN / 100mL	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 23-Sep-2020 and 28-Sep-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

A handwritten signature in blue ink, consisting of several overlapping, stylized strokes that form a unique, illegible mark.

Ara Heron BSc (Tech)
Client Services Manager - Environmental