



## ANALYSIS REPORT

<b>Client:</b>	Deep Waters	<b>Lab No:</b>	779645	SPV1
<b>Contact:</b>	Kerry Rutherford C/- Deep Waters 81 Bickerton Street Wainoni Christchurch 8061	<b>Date Registered:</b>	30-Mar-2010	
		<b>Date Reported:</b>	16-Apr-2010	
		<b>Quote No:</b>	31353	
		<b>Order No:</b>		
		<b>Client Reference:</b>	0132	
		<b>Submitted By:</b>	Kerry Rutherford	

### Sample Type: Aqueous

Sample Name:		750mL 0132-1 & 2 30-Mar-2010 12:30 pm				
Lab Number:		779645.1				
pH	pH Units	8.1	-	-	-	-
Total Hardness	g/m <sup>3</sup> as CaCO <sub>3</sub>	68	-	-	-	-
Calcium hardness*	g/m <sup>3</sup> as CaCO <sub>3</sub>	53	-	-	-	-
Magnesium hardness*	g/m <sup>3</sup> as CaCO <sub>3</sub>	15.1	-	-	-	-
Total Dissolved Solids (TDS)	g/m <sup>3</sup>	113	-	-	-	-
Calcium	g/m <sup>3</sup>	21	-	-	-	-
Magnesium	g/m <sup>3</sup>	3.7	-	-	-	-
Potassium	g/m <sup>3</sup>	0.96	-	-	-	-
Chloride	g/m <sup>3</sup>	8.2	-	-	-	-
Nitrite-N	g/m <sup>3</sup>	0.0044	-	-	-	-
Nitrate-N	g/m <sup>3</sup>	0.30	-	-	-	-
Nitrate-N + Nitrite-N	g/m <sup>3</sup>	0.31	-	-	-	-
Reactive Silica	g/m <sup>3</sup> as SiO <sub>2</sub>	18.9	-	-	-	-
Sulphate	g/m <sup>3</sup>	1.58	-	-	-	-
Heterotrophic Plate Count 22°C (72 hrs)	cfu / mL	< 1 #1	-	-	-	-
Heterotrophic Plate Count 35°C (48 hrs)	cfu / mL	< 1 #1	-	-	-	-
Escherichia coli	MPN / 100mL	< 1	-	-	-	-
Pseudomonas aeruginosa*	cfu / 100mL	< 1	-	-	-	-

### Analyst's Comments

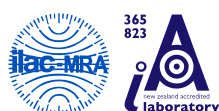
#1 Statistically estimated count based on the theoretical countable range for the stated method.

## 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.

### Sample Type: Aqueous

Test	Method Description	Default Detection Limit	Samples
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter.	-	1
pH	pH meter. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 4500-H+ B 21 <sup>st</sup> ed. 2005.	0.1 pH Units	1
Total Hardness	Calculation: from Ca and Mg. APHA 2340 B 21 <sup>st</sup> ed. 2005.	1.0 g/m <sup>3</sup> as CaCO <sub>3</sub>	1
Calcium hardness*	Calculation from Calcium.	1.0 g/m <sup>3</sup> as CaCO <sub>3</sub>	1
Magnesium hardness*	Calculation from Magnesium.	1.0 g/m <sup>3</sup> as CaCO <sub>3</sub>	1
Total Dissolved Solids (TDS)	Filtration through GF/C (1.2 µm), gravimetric. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2540 C (modified; drying temperature of 103 - 105°C used rather than 180 ± 2°C) 21 <sup>st</sup> ed. 2005.	10 g/m <sup>3</sup>	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	Samples
Calcium	Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 21 <sup>st</sup> ed. 2005.	0.05 g/m <sup>3</sup>	1
Magnesium	Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 21 <sup>st</sup> ed. 2005.	0.02 g/m <sup>3</sup>	1
Potassium	Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 21 <sup>st</sup> ed. 2005.	0.05 g/m <sup>3</sup>	1
Chloride	Filtered sample. Ferric thiocyanate colorimetry. Discrete Analyser. APHA 4500 Cl <sup>-</sup> E (modified from continuous flow analysis) 21 <sup>st</sup> ed. 2005.	0.5 g/m <sup>3</sup>	1
Nitrite-N	Automated Azo dye colorimetry, Flow injection analyser. APHA 4500-NO <sub>2</sub> <sup>-</sup> I (Proposed) 21 <sup>st</sup> ed. 2005.	0.002 g/m <sup>3</sup>	1
Nitrate-N	Calculation: (Nitrate-N + Nitrite-N) - NO <sub>2</sub> N.	0.002 g/m <sup>3</sup>	1
Nitrate-N + Nitrite-N	Total oxidised nitrogen. Automated cadmium reduction, flow injection analyser. APHA 4500-NO <sub>3</sub> <sup>-</sup> I (Proposed) 21 <sup>st</sup> ed. 2005.	0.002 g/m <sup>3</sup>	1
Reactive Silica	Filtered sample. Heteropoly blue colorimetry. Discrete analyser. APHA 4500-SiO <sub>2</sub> F (modified from flow injection analysis) 21 <sup>st</sup> ed. 2005.	0.10 g/m <sup>3</sup> as SiO <sub>2</sub>	1
Sulphate	Filtered sample. Ion Chromatography. APHA 4110 B 21 <sup>st</sup> ed. 2005.	0.5 g/m <sup>3</sup>	1
Heterotrophic Plate Count 22°C (72 hrs)	Count on Plate count agar, Incubated at 22°C for 72 hours Analysed at Hill Laboratories - Microbiology; 101c Waterloo Road, Hornby, Christchurch. APHA 9215 21 <sup>st</sup> ed. 2005.	1 cfu / mL	1
Heterotrophic Plate Count 35°C (48 hrs)	Count on Plate count agar, Incubated at 35°C for 48 hours Analysed at Hill Laboratories - Microbiology; 101c Waterloo Road, Hornby, Christchurch. APHA 9215 21 <sup>st</sup> ed. 2005.	1 cfu / mL	1
Escherichia coli	MPN count using Colilert , Incubated at 35°C for 24 hours Analysed at Hill Laboratories - Microbiology; 101c Waterloo Road, Hornby, Christchurch. APHA 9223 B, 21 <sup>st</sup> ed. 2005.	1 MPN / 100mL	1
Pseudomonas aeruginosa*	Membrane filtration, Count on mPAC agar, Incubated at 41.5°C for 72 hours, Confirmation Analysed at Hill Laboratories - Microbiology; 101c Waterloo Road, Hornby, Christchurch. APHA 9213 E, 21 <sup>st</sup> ed. 2005.	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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Carole Rodgers-Carroll BA, NZCS  
Client Services Manager - Environmental Division