

AGENT: **Apal**
CLIENT : **Apal Client**
SAMPLE : **Bore**
BATCH No: **2019-221**

ANALYTICAL No: **W2**
DATE RECEIVED: **10.10.19**
DATE REPORTED: **17.10.19**

RESULTS: DESIRED LEVEL
PARAMETER LEVEL FOUND INTERPRETATION

PARAMETER	DESIRED LEVEL	LEVEL FOUND	INTERPRETATION
Water Characteristics:			
pH(water) [^]	6.5 - 8.5	7.7	High
Total Alkalinity	CaCO ₃ mg/L <150	248	High
Bicarbonate ["]	HCO ₃ mg/L < 400	303	Moderate
Carbonate ["]	CO ₃ mg/L -	0	Below LOQ
Calcium ["]	mg/L < 500	12	Very Low
Magnesium ["]	mg/L < 125	26	Moderate
Hardness	mg/L < 150	141	Hard
Saturation Index	LSI -0.5_+0.5	-0.5	Low Risk
Sodium [^]	mg/L < 180	252	Very High
Chloride [*]	mg/L < 350	373	Very High
EC ^{∞@}	µS/cm < 1000	1620	High
SAR [~]	< 5.5	9.4	Moderate
Impact on Livestock:			
TDS or 'Salts' [^]	mg/L < 600	825	High
Macro Elements:			
Nitrate [^]	mg NO ₃ /L < 50	<0.5	Below LOQ
Phosphorus	mg/L < 1	0.58	Low
Sulphate [^]	mg SO ₄ /L < 250	<3	Below LOQ
Potassium ["]	mg/L < 20	10.4	Moderate
Trace Elements:			
Aluminium [*]	mg/L < 5	<0.05	Below LOQ
Iron [^]	mg/L < 0.3	2.64	Very High
Cobalt [*]	mg/L < 0.01	<0.01	Below LOQ
Copper [*]	mg/L < 0.1	0.012	Very Low
Manganese [^]	mg/L < 0.1	0.050	Moderate
Zinc [*]	mg/L 2	<0.02	Below LOQ
Boron [*]	mg/L 0.5	0.06	Low
Molybdenum [*]	mg/L 0.01	<0.01	Below LOQ
Heavy Metals:			
Antimony [^]	µg/L < 3	NT	Not Tested
Arsenic [`]	µg/L < 10	NT	Not Tested
Barium [`]	µg/L < 2,000	NT	Not Tested
Beryllium [*]	µg/L < 60	NT	Not Tested
Boron [*]	µg/L < 4,000	NT	Not Tested
Cadmium [*]	µg/L < 2	NT	Not Tested
Chromium [*]	µg/L < 50	NT	Not Tested
Cobalt [*]	µg/L 10	NT	Not Tested
Copper [*]	µg/L < 2,000	NT	Not Tested
Lead [*]	µg/L 200	NT	Not Tested
Manganese [*]	µg/L <100	NT	Not tested
Mercury [*]	µg/L 2	NT	Not Tested
Molybdenum [*]	µg/L <10	NT	Not Tested
Nickel [*]	µg/L 200	NT	Not Tested
Selenium [*]	µg/L 20	NT	Not Tested
Tin [`]	µg/L NA	NT	Not Tested
Vanadium [*]	µg/L NA	NT	Not Tested
Zinc [*]	µg/L 2000	NT	Not Tested
Cyanide	µg/L NA	NT	Not Tested
Fluoride	µg/L NA	NT	Not Tested

References:

* Australian Water Quality Guidelines, ANZECC, 1992.
^ Australian Drinking Water Guidelines, 1994
" Brookside Laboratories Drinking Water for Livestock Guidelines 1972
` WHO 2009 Heavy Metals in drinking water
* & EPA USA 1994

Legend:

∞ Electrical Conductivity in µS/cm = dS/m x1000 = mS/mx10
LOQ = Limit of Quantitation
~ Sodium Absorption Ratio = Na⁺/(Ca⁺+Mg⁺)*0.5 in m.e./L
TDS = Total Dissolved Salts
NA = Not Applicable or Not Tested
@ EC: 1000 µS/cm = 1mS/cm = 1 dS/m

Methods of Analysis used by APAL:

pH: Thermo pH meter
Total Alkalinity & CO₃: calculation from HCO₃, CO₃, OH
Saturation Index: calculation from temperature, TDS, pH, Calcium, alkalinity
EC & TDS: Thermo conductivity meter, ion summation
SAR & Hardness: calculation from ICP-OES analysis
HCO₃: H₂SO₄ titration + Thermo conductivity meter
Cl: Automated Potentiometric Titration
NITRATE: Continuous Flow Analyser - Colorimetry
MACRO & TRACE ELEMENTS: ICP-OES analysis
Heavy Metal analysis performed by
Envirolab Group