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## LABORATORY WATER ANALYSIS REPORT

Client : John Makau	Reference No : 10/24/RO/2376	Date Received : 23/10/2024
Site Location : Yumbu-Mwingi	Source : Borehole	Analysis Date : 24/10/2024
Type of Test : WT Equipment Design (MM5/Wave) Water Analysis	Sampling Date : 22/10/2024	Report Date : 28/10/2024
KEY: <span style="background-color: green; color: white;">PASS</span> <span style="background-color: red; color: white;">FAIL</span>	NS - No Standard	ND - Not Detected
		TN - Too Numerous

PARAMETERS	METHOD OF ANALYSIS	UNITS	VALUES	WHO GUIDELINES	REMARKS
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### PHYSICAL ANALYSIS

pH	8156	pH Units	6.13	6.5 - 8.50	<span style="background-color: red; color: white;">FAIL</span>
TDS	10256	Mg/l	860	<1000	<span style="background-color: green; color: white;">PASS</span>
Total Suspended Solids(TSS)	8006	Mg/l	15	NIL	<span style="background-color: red; color: white;">FAIL</span>
Salinity	8160	ppt	0.67	NS	
Electrical Conductivity(EC)	10256	µS/cm	1332	<1500	<span style="background-color: green; color: white;">PASS</span>
Turbidity	8237	NTU	5.1	<5	<span style="background-color: red; color: white;">FAIL</span>
Color	8025	PtCo	10	<15	<span style="background-color: green; color: white;">PASS</span>

### CHEMICAL ANALYSIS

Iron, Fe	8008	Mg/l Fe	0.15	<0.30	<span style="background-color: green; color: white;">PASS</span>
Manganese, Mn	8149	Mg/l Mn	0.73	<0.10	<span style="background-color: red; color: white;">FAIL</span>
Copper, Cu	8506	Mg/l Cu	0.08	<2.0	<span style="background-color: green; color: white;">PASS</span>
Fluorides	8323	Mg/l F	0.3	<1.5	<span style="background-color: green; color: white;">PASS</span>
*Ammonical Nitrogen	8155	NH3-N	0.02	NS	
*Ammonium	8155	NH4+	0.03	<1.5	<span style="background-color: green; color: white;">PASS</span>
*Ammonia	8155	NH3	0.02	<2.0	<span style="background-color: green; color: white;">PASS</span>
Nitrate N	8039	Mg/l NO3N	2.1	<11.3	<span style="background-color: green; color: white;">PASS</span>
Nitrate	8039	NO3-	9	<50	<span style="background-color: green; color: white;">PASS</span>
*Nitrites	8153	Mg/l NO2	0	<3	<span style="background-color: green; color: white;">PASS</span>
*Nitrite N	8153	Mg/l NO2-N	0.0	<1	<span style="background-color: green; color: white;">PASS</span>
*Potassium	8049	Mg/l K	8	<50	<span style="background-color: green; color: white;">PASS</span>
Phosphates	8048	Mg/l PO <sub>4</sub> <sup>3-</sup>	0.25	<0.61	<span style="background-color: green; color: white;">PASS</span>
*Silicon	8185	Mg/l	31	< 50	<span style="background-color: green; color: white;">PASS</span>
*Silica	8185	Mg/l SiO <sub>2</sub>	67	<107	<span style="background-color: green; color: white;">PASS</span>
Calcium	8204	Mg/l Ca <sup>2+</sup>	106	<150	<span style="background-color: green; color: white;">PASS</span>
Magnesium	8213	Mg/l Mg <sup>2+</sup>	33	<100	<span style="background-color: green; color: white;">PASS</span>
Calcium Hardness	8204	Mg/l Ca <sup>2+</sup> (CaCO <sub>3</sub> )	266	NS	
Magnesium Hardness	8213	Mg/l Mg <sup>2+</sup> (CaCO <sub>3</sub> )	137	NS	
Total Hardness	8213	Mg/l CaCO <sub>3</sub>	403	<300	<span style="background-color: red; color: white;">FAIL</span>
Aluminium, Al	8012	Mg/l Al	0.04	<0.10	<span style="background-color: green; color: white;">PASS</span>
Sulphate, SO <sub>4</sub>	8051	Mg/l SO <sub>4</sub>	33	<400	<span style="background-color: green; color: white;">PASS</span>
Chlorides	8207	Mg/l Cl	219	<250	<span style="background-color: green; color: white;">PASS</span>
Total Alkalinity	8203	Mg/l CaCO <sub>3</sub>	321	NS	
Phenolphthalein Alkalinity	8204	Mg/l CaCO <sub>3</sub>	ND	NS	
Bicarbonates	8205	Mg/l HCO <sub>3</sub> <sup>-</sup>	321	<255	<span style="background-color: red; color: white;">FAIL</span>
Carbonates	8206	Mg/l CO <sub>3</sub> <sup>2-</sup>	0	<121	<span style="background-color: green; color: white;">PASS</span>
Sodium, Na	8322	Mg/l Na	162	<200	<span style="background-color: green; color: white;">PASS</span>

### COMMENTS

Based on the water analysis, the levels of pH, TSS, Turbidity, Manganese, Total Hardness and Bicarbonates did not meet WHO limits, therefore, water treatment is recommended.

The results relate to the sample(s) submitted. The laboratory will not be held responsible for any sampling errors.

\*The parameter is not accredited. # Parameters is sub contracted to a third party laboratory

PREPARED BY : RACHEAL KIMANI

SIGN *Rachel Kimani* Date: 28/10/2024

APPROVED BY: JOHN WAEMA

SIGN *John Waema* Date: 28/10/2024



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