

Sample Requisition No - RDKL/FW/2324/SR00072 & SR00073

Allocation Date - 27.02.2024

Parameter - T.Hardness,  $\text{Ca}^{2+}$  &  $\text{Mg}^{2+}$

Test Start Date - 28.02.2024

Test End Date - 28.02.2024

Due Date - 05.03.2024

Name of Supervisor - Md. A. Rafique.

### Total Hardness

Test Method: APHA 24<sup>th</sup> Ed. 2340-C Part 2000, 124-126

Stand<sup>m</sup> of EDTA - 10 ml of  $\text{CaCO}_3$  sol<sup>m</sup> ( $\approx 10$  mg of  $\text{CaCO}_3$ )  $\approx 9.9$  ml of EDTA sol<sup>m</sup>  
 $\therefore N = \text{mg eq. of } \text{CaCO}_3 \text{ per ml of EDTA} = \frac{10}{9.9} = 1.0101$

S.No.	Sample Code	Sample Volume (ml)	F.R. (ml)	I.R. (ml)	Vol. of EDTA Consumed (ml)	Result (mg/l)
01.	Blank	50	0.1	0	0.1	
02.	2324/RDKL/FW/FW/L00141	50	26.8	19.8	7	141
03.	2324/" /L00142	50	34.2	26.8	7.4	149

Calculat<sup>m</sup> - T. Hardness (mg/l) =  $\left[ \frac{\text{Volume of Consumed EDTA (ml)} \times 1000 \times N}{\text{Sample Volume (ml)}} \right]$

### Calcium & Magnesium

Test Method: APHA 23<sup>rd</sup> Ed. 3500 CaB Part 3000, 245 to 255

APHA 24<sup>th</sup> Ed. 3500 MgB Part 3000, 274

Stand<sup>m</sup> of EDTA - 10 ml of  $\text{CaCO}_3$  sol<sup>m</sup> ( $\approx 10$  mg of  $\text{CaCO}_3$ )  $\approx 9.8$  ml of EDTA sol<sup>m</sup>  
 $\therefore N = \text{mg eq. of } \text{CaCO}_3 \text{ per ml of EDTA} = \frac{10}{9.8} = 1.0204$

S.No.	Sample Code	Sample Vol. (ml)	F.R. (ml)	I.R. (ml)	Vol. Consumed (ml)	Ca-Hard (mg/l)	$\text{Ca}^{2+}$ (mg/l)	$\text{Mg}^{2+}$ (mg/l)
01.	2324/RDKL/FW/FW/L00141	50	38.6	34.2	4.4	90	36	12
02.	" /L00142	50	43.2	38.6	4.6	94	38	13

Calculation - Ca-Hard (mg/l) =  $\left[ \frac{\text{Vol. of EDTA Consumed (ml)} \times 1000 \times N}{\text{Sample Volume (ml)}} \right]$

$\text{Ca}^{2+}$  (mg/l) = Ca-Hard  $\times 0.40$

$\text{Mg}^{2+}$  (mg/l) = [T. Hard - (Ca-Hard)]  $\times 0.243$

Ajeet Verma  
28/02/2024

01.03.24