Slide#3

Firstly, calculate concentrations in meq/L units:

(conc. in meq/L) = (conc. in mg/L) / (Ionic weight, IW) x (oxidation number)

Cations	IW (g/mole)	Conc. in mg/L	Conc. in meq/L
Ca^{2+}	40.1	93.8	4.68
Mg^{2+}	24.3	28.0	2.30
Na^+	23.0	13.7	0.60
K^+	39.1	30.2	0.77
			$\sum$(cations) = 8.35

Cations	IW (g/mole)	Conc. in mg/L	Conc. in meq/L
HCO_3^-	61.0	164.7	2.70
SO_4^{2-}	96.1	134.0	2.79
Cl^-	35.5	92.5	2.61
			$\sum$(anions) = 8.10

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$$\left| \sum (anions) - \sum (cations) \right| = 0.25$$

$$0.1065 + 0.0155 \sum (anions) = 0.23$$

Therefore,

$$\left| \sum anions - \sum cations \right| > \left(0.1065 + 0.0155 \sum anions \right) \qquad \text{(not acceptable)}$$

Source of error:

  - measurement error

  - missing one or more significant ions