

Table (4.2): Hydrochemistry data

Well Name	EC at 25°C (ms/cm)		TDS (ppm)	pH	UNIT	CATIONS				Sum	ANIONS				S.A.R
						K ⁺	Na ⁺	Mg ⁺⁺	Ca ⁺⁺		NO ₃ ⁻	Cl ⁻	SO ₄ ⁻	HCO ₃ ⁻	
W1	4.58	2972	8.00		ppm	17.73	888.64	34.16	73.73		48.05	806.82	872.73	278.27	
					epm	0.45	38.64	2.81	3.69	45.59	0.78	22.73	18.18	4.56	21.44
					e %	1.00	84.75	6.16	8.09		1.68	49.14	39.31	9.86	
W2	4.52	2922	7.70		ppm	34.27	783.22	45.42	106.45		52.00	655.14	949.09	348.44	
					epm	0.88	34.05	3.73	5.32	43.99	0.84	18.45	19.77	5.71	16.00
					e %	2.00	77.41	8.49	12.10		1.87	41.21	44.16	12.76	
W3	4.49	2949	8.10		ppm	34.86	796.72	49.20	110.27		51.02	729.90	901.09	327.18	
					epm	0.89	34.64	4.05	5.51	45.09	0.82	20.56	18.77	5.36	15.84
					e %	1.98	76.82	8.97	12.23		1.80	44.97	41.06	11.73	
W4	5.44	3491	7.85		ppm	20.68	1024.55	45.14	85.85		39.72	753.03	1400.00	161.74	
					epm	0.53	44.55	3.71	4.29	53.08	0.64	21.21	29.17	2.65	22.27
					e %	1.00	83.92	6.99	8.09		1.21	40.00	55.00	5.00	
W5	3.96	2822	7.48		ppm	30.88	785.83	40.53	68.50		39.42	591.67	960.00	305.00	
					epm	0.79	34.17	3.33	3.43	41.72	0.64	16.67	20.00	5.00	18.59
					e %	1.90	81.90	7.99	8.21		1.50	39.40	47.28	11.82	
W6	2.68	1833	7.60		ppm	20.68	518.37	26.79	27.52		39.00	329.45	521.82	388.18	
					epm	0.53	22.54	2.20	1.38	26.65	0.63	9.28	10.87	6.36	16.85

Continue

4.2.2.1 Salinity distribution

Salinity is the measure of the concentration of dissolved (soluble) salt in water. It is usual to report the concentration as Total Dissolved Solids (TDS). Salinity is more commonly measured by electrical conductivity and expressed as milli Siemens per meter (mS/m), milli Siemens per centimeter (mS/cm) or micro Siemens per centimeter (S/cm). The temperature should also be specified; the standard is 25 degrees Celsius. An approximate conversion can then be made to parts per thousand, assuming a dominantly sodium chloride composition.

Figure (4-8) shows the distribution of Pleistocene aquifer salinity in the area where the minimum values are 600 ppm (part per Million) in the southern east and east sides, and the maximum values are 3900 ppm in the south. Generally, the salinity decreases to the east due to continuous recharging from the Rosette branch and drainage system in the area.

4.2.2.2 PH distribution

The hydrogen ion concentration (PH) of water is a measure of its acidity or alkalinity. A neutral PH, neither acid nor alkaline, is 7.0; waters with pH below 7 are acidic and above 7 are alkaline. A PH of 8.5 or higher is a good indication that the water is high in soluble salts. Using waters with high PH might require special cropping and irrigation practices.

The PH values in the area ranges from 7.07 to 8.10, and it is obvious that the groundwater is of alkaline type.

4.2.2.3 Electrical conductivity (EC)

Electrical conductivity is the ability of the solution to conduct the current. It is a function of concentration and a charge of the ions.