



South Permian Basin Region
 10520 West I-20 East
 Odessa, TX 79765
 (915) 498-0191
 Lab Team Leader - Sheila Hernandez
 (915) 495-7240

Water Analysis Report by Baker Petrolite

Company:	APACHE CORPORATION	Sales RDT:	33102
Region:	PERMIAN BASIN	Account Manager:	MIKE EDWARDS (505) 910-9517
Area:	EUNICE, NM	Sample #:	223099
Lease/Platform:	NORTHEAST DRINKARD UNIT	Analysis ID #:	28971
Entity (or well #):	WATER INJECTION STATION	Analysis Cost	\$40.00
Formation:	UNKNOWN		
Sample Point:	INJECTION PUMP DISCHARGE		

Summary		Analysis of Sample 223099 @ 75 °F					
Sampling Date:	10/3/02	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date:	10/4/02	Chloride:	10086.0	284.49	Sodium:	5799.5	252.26
Analyst:	SHEILA HERNANDEZ	Bicarbonate:	671.0	11.	Magnesium:	439.0	36.11
TDS (mg/l or g/m3):	20702.9	Carbonate:	0.0	0.	Calcium:	1099.0	54.84
Density (g/cm3, tonne/m3):	1.015	Sulfate:	2465.0	51.32	Strontium:	28.0	0.64
Anion/Cation Ratio:	1.000000	Phosphate:			Barium:	0.1	0.
		Borate:			Iron:	0.3	0.01
		Silicate:			Potassium:	115.0	2.94
Carbon Dioxide:	60 PPM	Hydrogen Sulfide:		90 PPM	Aluminum:		
Oxygen:		pH at time of sampling:		7.5	Chromium:		
Comments:		pH at time of analysis:			Copper:		
		pH used in Calculation:		7.5	Lead:		
					Manganese:		
					Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂ Press
		Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	
°F	psi											psi
80	0	1.18	75.54	-0.08	0.00	-0.14	0.00	0.07	2.75	0.75	0.00	0.21
100	0	1.25	85.15	-0.09	0.00	-0.09	0.00	0.07	3.09	0.60	0.00	0.3
120	0	1.33	95.11	-0.10	0.00	-0.02	0.00	0.09	3.78	0.47	0.00	0.42
140	0	1.41	105.41	-0.10	0.00	0.08	128.07	0.11	4.46	0.36	0.00	0.56

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.
 Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.
 Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.