

TRETOLITE

Chemicals and Services

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WATER ANALYSIS REPORT

Company : ARMSTRONG ENERGY
Address : JAL, NM
Lease : MOBERLY A
Well :
Sample Pt. :

Date : 12/04/91
Date Sampled : 11/27/91
Analysis No. : 920

ANALYSIS		mg/L		* meq/L
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1. pH	7.5			
2. H2S	POSITIVE			
3. Specific Gravity	1.010			
4. Total Dissolved Solids		9749.2		
5. Suspended Solids				
6. Dissolved Oxygen				
7. Dissolved CO2				
8. Oil In Water				
9. Phenolphthalein Alkalinity (CaCO3)				
10. Methyl Orange Alkalinity (CaCO3)		881.0		
11. Bicarbonate	HCO3	1074.8	HCO3	17.6
12. Chloride	Cl	5026.9	Cl	141.8
13. Sulfate	SO4	50.0	SO4	1.0
14. Calcium	Ca	120.2	Ca	6.0
15. Magnesium	Mg	99.7	Mg	8.2
16. Sodium (calculated)	Na	3362.5	Na	146.3
17. Iron	Fe	5.0		
18. Barium	Ba	10.0		
19. Strontium	Sr	0.0		
20. Total Hardness (CaCO3)		710.6		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter		Compound	Equiv wt	X meq/L	= mg/L
+-----+					
6 *Ca <----- *HCO3	18	Ca (HCO3) 2	81.0	6.0	486
/----->		CaSO4	68.1		
8 *Mg <----- *SO4	1	CaCl2	55.5		
<-----/		Mg (HCO3) 2	73.2	8.2	600
146 *Na <----- *Cl	142	MgSO4	60.2		
+-----+		MgCl2	47.6		
Saturation Values Dist. Water 20 C		NaHCO3	84.0	3.4	287
CaCO3 13 mg/L		Na2SO4	71.0	1.0	74
CaSO4 * 2H2O 2090 mg/L		NaCl	58.4	141.8	8287
BaSO4 2.4 mg/L					

REMARKS: TOMMY SCROGGINS / BRUCE WILLBANKS
----- D. SWEATT / MLAB / FILE

Petrolite Oilfield Chemicals Group

Respectfully submitted,
ROZANNE JOHNSON

BUREAU OF LAND MANAGEMENT
CARLSBAD RESOURCE AREA

Disposal of Produced Water From Federal Wells

Conditions of Approval

Approval of the produced water disposal methodology is subject to the following conditions of approval:

1. This agency be notified of any change in your method or location of disposal.
2. Compliance with all provisions of NTL-2B.
3. This agency shall be notified of any spill or discharge as required by NTL-3A.
4. This agency reserves the right to modify or rescind approval whenever it determines continued use of the approved method may adversely affect the surface or subsurface environments.
5. All aboveground structures on the lease shall be painted sandstone brown, Federal Std. 595-20318, or 30318, within 90 days if you have not already done so.
6. Any on lease open top storage tanks or pits shall be covered with a wire screen or plastic/nylon netting to prevent entry by birds and other wildlife.
7. This approval does not constitute right-of-way approval for any off lease activities. If water is transported via a pipeline that extends beyond the lease boundary, then you need to submit within 30 days an application for right-of-way approval to the Realty Section in this office if you have not already done so.