

2/1/2018 Report Date:

Complete Water Analysis							
Customer:	Pine Island Chemical	Account Rep:	Brent Fletcher				
Operator:	Enwater	Sample ID:	1180124059				
Lease:	Suter	Sample Date:	1/23/2018				
Sample Point:	Inj WH	Recieved Date:	1/24/2018				
Region:	West Texas	Log Out Date:	2/1/2018				

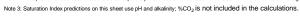
## Pine Island Chemical, Enwater, Suter, Inj WH

Field Da	ata		Analysis of Sample							
			Anions:	mg/L	meq/L	Cations:	mg/L	meq/L		
Initial Temperature (°F):		190	Chloride (Cl <sup>-</sup> ):	56400	1591.0	Sodium (Na <sup>+</sup> ):	28529	1241.5		
Final Temperature (°F):		80	Sulfate (SO <sub>4</sub> 2-):	700	14.6	Potassium (K <sup>+</sup> ):	273	7.0		
Initial Pressure (psi):		1250	Borate (H <sub>3</sub> BO <sub>3</sub> ):	199	3.2	Magnesium (Mg <sup>2+</sup> ):	763	62.8		
Final Pressure (psi):		15	Silica (SiO <sub>2</sub> ):	34.4	0.6	Calcium (Ca <sup>2+</sup> ):	2987	149.0		
						Strontium (Sr <sup>2+</sup> ):	276	6.3		
Sample Specifics						Barium (Ba <sup>2+</sup> ):	3.0	0.0		
pH:		7.0				Iron (Fe <sup>2+</sup> ):	27.0	1.0		
			Phosphate (PO <sub>4</sub> 3-):	6.2	0.2	Manganese (Mn <sup>2+</sup> ):	0.6	0.0		
						Lead (Pb <sup>2+</sup> ):	ND			
						Zinc (Zn <sup>2+</sup> ):	0.3	0.0		
Alkalinity by Titration:	mg/L	meq/L				Lithium (Li <sup>+</sup> ):	9.5	1.4		
Bicarbonate (HCO <sub>3</sub> -):	500	8.2				Aluminum (Al <sup>3+</sup> ):	0.1	0.0		
Carbonate (CO <sub>3</sub> <sup>2-</sup> ):	0.0	0.0								
Hydroxide (OH <sup>-</sup> ):	ND									
aqueous CO <sub>2</sub> (ppm):	260					Total Hardness (CaCO <sub>3</sub> ):	10922			
aqueous H₂S (ppm):	1.5									
Calculated TDS (mg/L):		90699								
Calculated Density (g/cm³):		1.0574								
Resistivity (Ωcm):		N/A								
Conductivity (mS/cm):		N/A								
Turbidity (NTU):		N/A								
			Anion EPM Total:		1617	Cation EPM Total:		1468		
N/A - Not Ap	plicable		% RPD of Cations/Anion	s:	9.7%	ND = Not				

Conditions		Barite (BaSO <sub>4</sub> )		Calcite (CaCO <sub>3</sub> )		Gypsum (CaSO <sub>4</sub> ·2H <sub>2</sub> O)		Anhydrite (CaSO <sub>4</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	1.00	1.611	1.28	97.535	-0.59	0.000	-0.79	0.000
92°F	152 psi	0.90	1.565	1.20	92.608	-0.59	0.000	-0.75	0.000
104°F	289 psi	0.81	1.512	1.27	96.645	-0.59	0.000	-0.69	0.000
117°F	427 psi	0.73	1.454	1.35	100.325	-0.59	0.000	-0.64	0.000
129°F	564 psi	0.65	1.390	1.42	103.687	-0.59	0.000	-0.58	0.000
141°F	701 psi	0.58	1.321	1.49	106.764	-0.58	0.000	-0.52	0.000
153°F	838 psi	0.52	1.248	1.56	109.586	-0.58	0.000	-0.46	0.000
166°F	976 psi	0.46	1.173	1.62	112.178	-0.58	0.000	-0.39	0.000
178°F	1113 psi	0.41	1.097	1.69	114.565	-0.57	0.000	-0.33	0.000
190°F	1250 psi	0.37	1.020	1.75	116.766	-0.56	0.000	-0.26	0.000

Conditions		Celestite (SrSO <sub>4</sub> )		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate (FeCO <sub>3</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.08	25.595	-1.62	0.000	2.01	2.041	0.91	16.236
92°F	152 psi	0.08	24.426	-1.63	0.000	1.79	2.024	0.86	15.831
104°F	289 psi	0.08	23.540	-1.64	0.000	1.80	2.025	0.97	16.619
117°F	427 psi	0.07	23.074	-1.65	0.000	1.81	2.026	1.07	17.210
129°F	564 psi	0.07	23.140	-1.66	0.000	1.82	2.027	1.16	17.657
141°F	701 psi	0.08	23.821	-1.66	0.000	1.83	2.029	1.25	17.996
153°F	838 psi	0.08	25.173	-1.67	0.000	1.85	2.030	1.32	18.257
166°F	976 psi	0.09	27.224	-1.67	0.000	1.87	2.032	1.40	18.458
178°F	1113 psi	0.10	29.977	-1.67	0.000	1.89	2.034	1.46	18.615
190°F	1250 psi	0.11	33.412	-1.67	0.000	1.92	2.036	1.52	18.738

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 eight (8) scales.





Comments:

Sample ID: 43123 Pine Island Chemical, Enwater, Suter, Inj WH

