

Martin Water Laboratories, Inc.

MONAHAN, TEXAS 79704
PH. 563-3231 OR 563-1040

700 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4821

RESULT OF WATER ANALYSES

TO: **Mr. Bill Carlton**
303 W. Wall, Ste 2200, Midland, TX 79701

LABORATORY NO. **893150**
SAMPLE RECEIVED **8-24-93**
RESULTS REPORTED **8-26-93**

COMPANY **Collins & Ware, Inc.** LEASE **Sheep Draw Federal**
FIELD OR POOL **1. Happy Valley 2. Undesignated**
SECTION _____ BLOCK _____ SURVEY _____ COUNTY **Eddy** STATE **NM**

SOURCE OF SAMPLE AND DATE TAKEN:

- NO. 1 **Produced water - taken from Sheep Draw Federal #2,**
NO. 2 **Produced water - taken from Sheep Draw Federal #3.**
NO. 3 _____
NO. 4 _____

REMARKS: **Delaware (Cherry Canyon)**

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F	1.1812	1.1536		
pH When Sampled				
pH When Received	5.00	6.48		
Bicarbonate as HCO ₃	122	244		
Supersaturation as CaCO ₃	10	10		
Undersaturation as CaCO ₃	---	---		
Total Hardness as CaCO ₃	90,500	72,000		
Calcium as Ca	29,500	21,600		
Magnesium as Mg	3,888	4,374		
Sodium and/or Potassium	73,663	58,588		
Sulfate as SO ₄	429	859		
Chloride as Cl	176,837	140,618		
Iron as Fe	24.3	459		
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	284,439	226,283		
Temperature °F				
Carbon Dioxide, Calculated	1,952	127		
Dissolved Oxygen				
Hydrogen Sulfide	0.0	0.0		
Resistivity ohm-cm at 77° F	0.048	0.053		
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Calcium Carbonate Scaling Tendency	None	None		
Calcium Sulfate Scaling Tendency	None	None		

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: **The above shows no evidence of any potential scaling from either of these waters. We generally classify the corrosiveness of the water from well #2 as moderate and well #3 as severe. The type of corrosion from well #3 is that of sulfide (iron was present as iron sulfide), which would cause iron sulfide deposits that create localized pitting action due to electrolysis. As compared to laboratory #693231 (6-30-93), we see no significant change in the water from well #2 but a pronounced change in the water from well #3. The water from well #3 now more nearly resembles natural Cherry Canyon, but there still appears to be a mild influence from the water that caused lower salt contents and hydrogen sulfide on the previous analysis. Contact us if we can be of any additional assistance.**

By **Waylan C. Martin, M.A.**