



Rocky Mountain Area Laboratory
350 Cole Creek Road,
Evansville, WY 82636

REPORT DATE: 6/19/2020

COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER:	CHEVRON	ACCOUNT REP:	JASON R KURRASCH
DISTRICT:	WESTERN DIVIDE	SAMPLE ID:	202012011178
AREA/LEASE:	RANGELY	SAMPLE DATE:	6/2/2020
SAMPLE POINT NAME	COLLECTION STATION 13 FEE 95X	ANALYSIS DATE:	6/19/2020
SITE TYPE:		ANALYST:	KS
SAMPLE POINT DESCRIPTION:			

CHEVRON, RANGELY, COLLECTION STATION 13 FEE 95X

FIELD DATA			ANALYSIS OF SAMPLE					
			ANIONS:	mg/L	meq/L	CATIONS:	mg/L	meq/L
Initial Temperature (°F):	250		Chloride (Cl ⁻):	14184.0	400.1	Sodium (Na ⁺):	13116.7	570.8
Final Temperature (°F):	80		Sulfate (SO ₄ ²⁻):	974.0	20.3	Potassium (K ⁺):	131.3	3.4
Initial Pressure (psi):	100		Borate (H ₃ BO ₃):	32.0	0.5	Magnesium (Mg ²⁺):	21.4	1.8
Final Pressure (psi):	15		Fluoride (F ⁻):	ND		Calcium (Ca ²⁺):	155.9	7.8
			Bromide (Br ⁻):	ND		Strontium (Sr ²⁺):	2.0	0.0
pH:			Nitrite (NO ₂ ⁻):	ND		Barium (Ba ²⁺):	113.0	1.6
pH at time of sampling:			Nitrate (NO ₃ ⁻):	ND		Iron (Fe ²⁺):	281.5	10.1
			Phosphate (PO ₄ ³⁻):	15.2	0.5	Manganese (Mn ²⁺):	5.2	0.2
			Silica (SiO ₂):	48.8		Lead (Pb ²⁺):	ND	
						Zinc (Zn ²⁺):	16.2	0.5
ALKALINITY BY TITRATION:								
	mg/L	meq/L						
Bicarbonate (HCO ₃ ⁻):	8603.4	141.0				Aluminum (Al ³⁺):	ND	
Carbonate (CO ₃ ²⁻):	ND					Chromium (Cr ³⁺):	ND	
Hydroxide (OH ⁻):	ND					Cobalt (Co ²⁺):	ND	
			ORGANIC ACIDS:	mg/L	meq/L	Copper (Cu ²⁺):	ND	
aqueous CO ₂ (ppm):	ND		Formic Acid:	ND		Molybdenum (Mo ²⁺):	ND	
aqueous H ₂ S (ppm):	0.0		Acetic Acid:	ND		Nickel (Ni ²⁺):	ND	
aqueous O ₂ (ppb):	ND		Propionic Acid:	ND		Tin (Sn ²⁺):	ND	
			Butyric Acid:	ND		Titanium (Ti ²⁺):	ND	
Calculated TDS (mg/L):	37653		Valeric Acid:	ND		Vanadium (V ²⁺):	ND	
Density/Specific Gravity (g/cm ³):	1.0234					Zirconium (Zr ²⁺):	ND	
Measured Specific Gravity	ND					Lithium (Li):	ND	
Conductivity (mmhos):	ND							
Resistivity:	ND					Total Hardness:	562	N/A
MCF/D:	No Data							
BOPD:	No Data							
BWPD:	No Data		Anion/Cation Ratio:		0.94			ND = Not Determined

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite (BaSO ₄)		Calcite (CaCO ₃)		Gypsum (CaSO ₄ ·2H ₂ O)		Anhydrite (CaSO ₄)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	3.04	67.164	3.02	136.163	-1.44	0.000	-1.67	0.000
99°F	24 psi	2.88	67.136	3.05	136.175	-1.44	0.000	-1.60	0.000
118°F	34 psi	2.75	67.102	3.09	136.187	-1.44	0.000	-1.51	0.000
137°F	43 psi	2.64	67.065	3.14	136.199	-1.43	0.000	-1.41	0.000
156°F	53 psi	2.55	67.027	3.19	136.212	-1.41	0.000	-1.30	0.000
174°F	62 psi	2.48	66.991	3.25	136.224	-1.40	0.000	-1.19	0.000
193°F	72 psi	2.42	66.957	3.32	136.236	-1.37	0.000	-1.07	0.000
212°F	81 psi	2.38	66.927	3.39	136.247	-1.35	0.000	-0.94	0.000
231°F	91 psi	2.35	66.903	3.46	136.257	-1.32	0.000	-0.81	0.000
250°F	100 psi	2.32	66.885	3.54	136.265	-1.30	0.000	-0.68	0.000

Conditions		Celestite (SrSO ₄)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate (FeCO ₃)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	-1.73	0.000	-2.58	0.000	-4.83	0.000	5.02	204.382
99°F	24 psi	-1.73	0.000	-2.60	0.000	-4.98	0.000	5.12	204.383
118°F	34 psi	-1.72	0.000	-2.61	0.000	-5.10	0.000	5.21	204.383
137°F	43 psi	-1.70	0.000	-2.62	0.000	-5.19	0.000	5.29	204.383
156°F	53 psi	-1.67	0.000	-2.63	0.000	-5.25	0.000	5.37	204.384
174°F	62 psi	-1.64	0.000	-2.63	0.000	-5.29	0.000	5.44	204.384
193°F	72 psi	-1.59	0.000	-2.63	0.000	-5.31	0.000	5.51	204.384
212°F	81 psi	-1.54	0.000	-2.63	0.000	-5.31	0.000	5.57	204.384
231°F	91 psi	-1.48	0.000	-2.62	0.000	-5.30	0.000	5.63	204.384
250°F	100 psi	-1.42	0.000	-2.61	0.000	-5.28	0.000	5.68	204.384

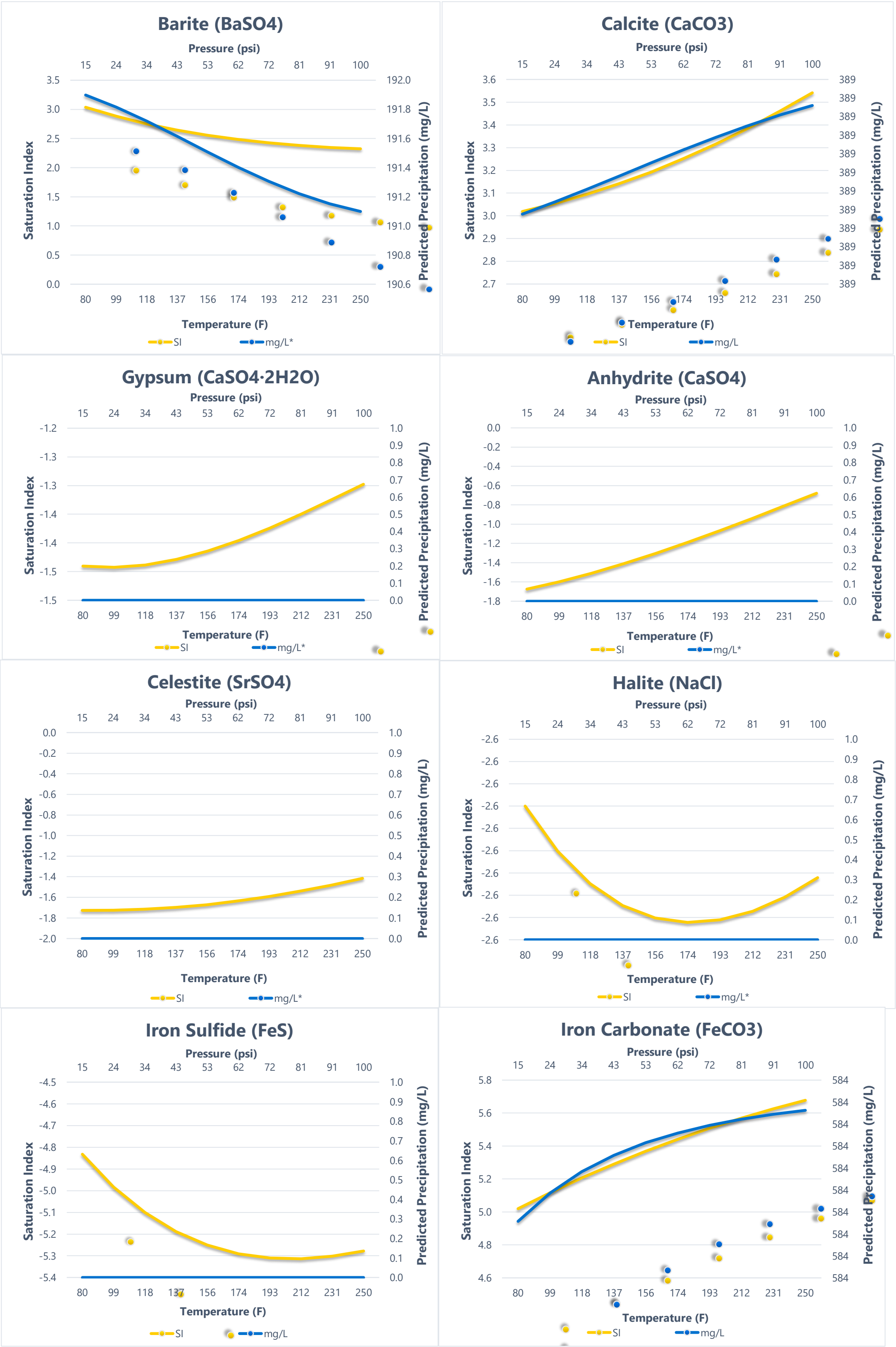
Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

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.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity; %CO₂ is not included in the calculations.



Comments:



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