



ANNUAL REPORT OF PRESSURE MONITORING, FLUID INJECTION AND ENHANCED RECOVERY

Complete all blanks - add pages if needed. Copy to be retained for five (5) years after filing date.

OPERATOR: License # _____
Name: _____
Address 1: _____
Address 2: _____
City: _____ State: _____ Zip: _____ + _____
Contact Person: _____
Phone: (_____) _____
Lease Name: _____
Well Number: _____

API No.: _____
Permit No.: _____
Reporting Year: _____
(January 1 to December 31)
____ - ____ - ____ - ____ Sec. ____ Twp. ____ S. R. ____ E W
(a/a/a/a)
_____ feet from N / S Line of Section
_____ feet from E / W Line of Section
County: _____

I. Injection Fluid:

Type (Pick one): Fresh Water Treated Brine Untreated Brine Water/Brine
Source: Produced Water Other (Attach list)
Quality: Total Dissolved Solids: _____ mg/l Specific Gravity: _____ Additives: _____
(Attach water analysis, if available)

II. Well Data:

Maximum Authorized Injection Pressure: _____ psi Injection Zone: _____
Maximum Authorized Injection Rate: _____ barrels per day
Total Number of Enhanced Recovery Injection Wells Covered by this Permit: _____ (Include TA's)

III.	Month:	Total Fluid Injected BBL	Maximum Fluid Pressure	Total Gas Injected MCF	Maximum Gas Pressure	# Days of Injection
	January	_____	_____	_____	_____	_____
	February	_____	_____	_____	_____	_____
	March	_____	_____	_____	_____	_____
	April	_____	_____	_____	_____	_____
	May	_____	_____	_____	_____	_____
	June	_____	_____	_____	_____	_____
	July	_____	_____	_____	_____	_____
	August	_____	_____	_____	_____	_____
	September	_____	_____	_____	_____	_____
	October	_____	_____	_____	_____	_____
	November	_____	_____	_____	_____	_____
	December	_____	_____	_____	_____	_____
	TOTAL	_____	_____	_____	_____	_____



LINN OPERATING
MICHAEL BELLOMY
HASKELL KS

SPRUNGER SWD
FLOWLINE

Report Date: 01-26-2016 Sampled: 01-18-2016
Sample #: 3076 at 0000

Sample ID: 117609

SATURATION LEVEL

Calcite (CaCO ₃)	0.0336
Aragonite (CaCO ₃)	0.0300
Witherite (BaCO ₃)	< 0.001
Strontianite (SrCO ₃)	0.00123
Calcium oxalate (CaC ₂ O ₄)	0.00
Magnesite (MgCO ₃)	0.00810
Anhydrite (CaSO ₄)	0.648
Gypsum (CaSO ₄ *2H ₂ O)	0.947
Barite (BaSO ₄)	6.30
Celestite (SrSO ₄)	0.396
Fluorite (CaF ₂)	0.00
Calcium phosphate	0.00
Hydroxyapatite	0.00
Silica (SiO ₂)	0.00
Brucite (Mg(OH) ₂)	< 0.001
Magnesium silicate	0.00
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	0.00
Siderite (FeCO ₃)	0.00778
Halite (NaCl)	0.117
Thenardite (Na ₂ SO ₄)	< 0.001
Iron sulfide (FeS)	0.0830

MOMENTARY EXCESS (Lbs/1000 Barrels)

Calcite (CaCO ₃)	-0.0167
Aragonite (CaCO ₃)	-0.0188
Witherite (BaCO ₃)	-23.15
Strontianite (SrCO ₃)	-0.688
Calcium oxalate (CaC ₂ O ₄)	-0.00620
Magnesite (MgCO ₃)	-0.0599
Anhydrite (CaSO ₄)	-92.27
Gypsum (CaSO ₄ *2H ₂ O)	-10.79
Barite (BaSO ₄)	0.454
Celestite (SrSO ₄)	-94.90
Fluorite (CaF ₂)	-2.39
Calcium phosphate	>-0.001
Hydroxyapatite	-252.66
Silica (SiO ₂)	-19.66
Brucite (Mg(OH) ₂)	< 0.001
Magnesium silicate	-78.46
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	>-0.001
Siderite (FeCO ₃)	-0.0829
Halite (NaCl)	-99864
Thenardite (Na ₂ SO ₄)	-84946
Iron sulfide (FeS)	-0.546

SIMPLE INDICES

Langelier	-0.950
Ryznar	8.22
Puckorius	8.62
Larson-Skold Index	15967
Stiff Davis Index	-1.30
Oddo-Tomson	-2.10

BOUND IONS

Calcium	7501	7309
Barium	0.912	0.912
Carbonate	0.0641	< 0.001
Phosphate	0.00	0.00
Sulfate	1175	354.88

TOTAL

FREE

OPERATING CONDITIONS

Temperature (°F)	44.00
Time(secs)	0.00

DownHole SAT™ Water Analysis Report



JACAM LABORATORIES

SYSTEM IDENTIFICATION

LINN OPERATING
 SPRUNGER SWD
 MICHAEL BELLOWY
 FLOWLINE
 HASKELL KS

Sample ID#: 3076
 ID: 117609
 Report Date: 01-26-2016
 Sample Date: 01-18-2016
 at 0000

WATER CHEMISTRY

CATIONS

Calcium(as Ca)	7501
Magnesium(as Mg)	2199
Barium(as Ba)	0.912
Strontium(as Sr)	161.60
Sodium(as Na)	52437
Potassium(as K)	509.70
Lithium(as Li)	9.74
Iron(as Fe)	3.48
Field Iron(as Fe)	0.00
Ammonia(as NH ₃)	0.00
Aluminum(as Al)	0.00
Manganese(as Mn)	0.0120
Zinc(as Zn)	1.06
Lead(as Pb)	0.00

ANIONS

Chloride(as Cl)	110000
Sulfate(as SO ₄)	1175
Bromine(as Br)	0.00
Dissolved CO ₂ (as CO ₂)	120.00
Bicarbonate(as HCO ₃)	14.80
Carbonate(as CO ₃)	0.00
Silica(as SiO ₂)	0.00
Phosphate(as PO ₄)	0.00
H ₂ S (as H ₂ S)	3.00
Fluoride(as F)	0.00
Nitrate(as NO ₃)	0.00
Boron(as B)	14.56

PARAMETERS

Temperature(°F)	44.00
Sample pH	6.32
T.D.S.	168556
Conductivity:	265810
Resistivity:	3.76

SCALE AND CORROSION POTENTIAL

Temp. (°F)	Press. (atm)	Calcite CaCO ₃		Anhydrite CaSO ₄		Gypsum CaSO ₄ *2H ₂ O		Barite BaSO ₄		Celestite SrSO ₄		Siderite FeCO ₃		Mackawenite FeS		CO ₂ (mpy)	pCO ₂ (atm)
50.00	0.00	0.0384	-0.0158	0.613	-104.33	0.894	-22.44	5.10	0.434	0.366	-104.00	0.00932	-0.0752	0.490	-0.207	0.0432	0.00293
65.45	0.00	0.0525	-0.0137	0.554	-123.90	0.782	-49.21	3.10	0.365	0.320	-119.23	0.0143	-0.0592	0.453	-0.231	0.0998	0.00293
80.91	0.00	0.0688	-0.0120	0.531	-127.67	0.698	-71.22	2.00	0.270	0.297	-126.16	0.0209	-0.0474	0.412	-0.259	0.0356	0.00293
96.36	0.00	0.0864	-0.0107	0.535	-118.27	0.636	-88.59	1.36	0.144	0.285	-128.38	0.0290	-0.0386	0.371	-0.290	0.0466	0.00293
111.82	0.00	0.104	-0.00961	0.564	-99.41	0.633	-84.56	0.974	-0.0142	0.278	-128.53	0.0387	-0.0318	0.330	-0.324	0.0490	0.00293
127.27	0.00	0.123	-0.00871	0.619	-75.01	0.667	-68.95	0.706	-0.224	0.270	-129.18	0.0500	-0.0266	0.295	-0.357	0.0415	0.00293
142.73	0.00	0.141	-0.00799	0.705	-48.54	0.697	-57.05	0.517	-0.502	0.261	-130.53	0.0627	-0.0226	0.264	-0.390	0.0337	0.00293
158.18	0.00	0.158	-0.00741	0.831	-22.68	0.724	-47.96	0.383	-0.865	0.252	-132.51	0.0760	-0.0194	0.236	-0.423	0.0332	0.00293
173.64	0.00	0.171	-0.00697	1.01	0.834	0.746	-41.06	0.286	-1.33	0.242	-135.11	0.0889	-0.0169	0.211	-0.456	0.0326	0.00293
189.09	0.00	0.178	-0.00666	1.26	21.08	0.765	-35.85	0.216	-1.94	0.232	-138.32	0.0998	-0.0150	0.188	-0.490	0.0158	0.00293
204.55	0.00	0.179	-0.00648	1.60	37.82	0.779	-31.99	0.164	-2.70	0.222	-142.16	0.107	-0.0135	0.167	-0.526	0.0128	0.00293
220.00	0.171	0.170	-0.00665	2.07	52.04	0.783	-31.30	0.125	-3.70	0.210	-149.71	0.109	-0.0128	0.166	-0.535	0.0173	0.00342

	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels
50.00							
65.45							
80.91							
96.36							
111.82							
127.27							
142.73							
158.18							
173.64							
189.09							
204.55							
220.00							

Saturation Levels (xSAT) are the ratio of ion activity to solubility, e.g. {Ca}{CO₃}/K_{sp}. pCO₂ (atm) is the partial pressure of CO₂ in the gas phase.
 Lbs/1000 Barrels scale is the quantity of precipitation (or dissolution) required to instantaneously bring the water to equilibrium.

