Facility Well Name Northern (Cunningham) #3 **UIC Permit #** KS-05-151-003 **Month** February **Year** 2019

Submitted 05/29/2019 **Approved** 06/18/2019 **KOLAR Document ID** 1459820

Class I-V Injection Well Monthly Monitoring

Summary of Monthly Report

Number of days injection occurred: 28

Barrels per Day Maximum: 4,000

			Annulus Pressure psig min 60		Injection Pressure		
	Injection Volume Barrels per Day	Injection Rate Barrels per Minute	Gauge psig	Cont. Record psig	Gauge psig	Cont. Record psig	Amount Added to Seal Pot
Monthly Average	521	0.57	89	88	-21.9	-20.4	0
Monthly Maximum	698	0.64	95	93	-19.0	-17.6	0
Monthly Minimum	189	0.48	86	85	-25.0	-23.0	0
Monthly Total	14,577						0

Summary of Continuous Recorder Data

Maximum Annulus Pressure psig	Minimum Annulus Pressure psig	Maximum Injection Pressure psig	Minimum Injection Pressure psig
98.20	81.70	-13.60	-29.30

Comments:

Northern (Cunningham) #3 02/2019

Daily Recorder Data

Day	Time 24 hr	Injection Volume Barrels Per Day	Injection Rate Barrels Per Minute	Annulus Pressure (Gauge) psig	Annulus Pressure (Continuous Recorder) psig	Injection Pressure (Gauge) + / -	Injection Pressure (Continuous Recorder) + / -	Seal Pot Fluid Level inches	Type of Fluid Added to Seal Pot	Amount of Fluid Added to Seal Pot gallons	Initials of Collector of Field Recordings		
1	13:10	654.36	0.48	88	88.5	-23	-20.1	20		0	WV		
2	11:55	646.52	0.60	88	87.8	-23	-19.8	20		0	WV		
3	09:00	645.62	0.62	87	86.9	-23	-19.8	20		0	WV		
4	08:30	633.21	0.62	86	85.2	-23	-20.9	20		0	GH		
5	09:20	626.62	0.62	86	85.4	-23	-21.1	20		0	GH		
6	08:25	499.62	0.64	86	86.1	-23	-20.4	20		0	GH		
7	08:15	229.31	0.62	86	84.9	-25	-23.0	19		0	GH		
8	08:50	622.05	0.64	92	90.7	-23	-21.0	18		0	GH		
9	07:30	643.24	0.64	93	91.4	-22	-19.3	18		0	GH		
10	07:25	639.43	0.64	95	93.0	-22	-18.8	19		0	GH		
11	11:24	651.83	0.60	93	92.4	-22	-17.9	20		0	AB		
12	11:30	669.02	0.60	92	90.9	-21	-18.2	20		0	KS		
13	09:30	678.40	0.50	91	90.8	-19	-17.6	20		0	KS		
14	11:05	698.45	0.50	91	90.5	-20	-17.8	21		0	KS		
15	13:35	680.17	0.55	86	86.6	-22	-21.4	20		0	KS		
16	08:10	652.90	0.52	87	86.0	-21	-20.4	20		0	KS		
17	08:20	542.29	0.52	89	85.5	-21	-20.9	20		0	KS		
18	09:55	511.00	0.52	89	85.6	-22	-21.1	18		0	KS		
19	08:40	477.98	0.52	87	85.7	-21	-21.7	17		0	LAF		
20	11:05	189.24	0.52	89	88.4	-22	-22.3	18		0	LAF		
21	09:05	249.33	0.52	91	91.8	-22	-21.5	18		0	LAF		
22	09:10	285.05	0.52	91	90.5	-22	-22.1	17		0	LAF		
23	09:00	448.57	0.55	88	86.9	-21	-19.2	15		0	LAF		
24	08:45	295.19	0.55	90	89.2	-22	-19.5	17		0	LAF		
25	08:05	438.33	0.55	88	86.0	-21	-20.7	15		0	KS		
26	11:05	426.52	0.52	86	85.4	-22	-22.0	15		0	KS		
27	11:15	423.12	0.62	88	85.7	-21	-21.4	15		0	KS		
28	09:40	419.98	0.64	87	85.7	-22	-22.2	15		0	KS		
29													
30													
31													

Northern (Cunningham) #3 02/2019

Weekly Injectate Samples

Kansas Lab Certificate Number

Week	Temperature		pH		Chloride				
	Degrees Fahrenheit	Date	Standard Units	Date	Cl concentration (mg/l)	Date Sample Collected	Date Sampl Analysed		
1	83.00	02/04/2019	6.40	02/04/2019	N/A				
2	82.50	02/11/2019	6.00	02/11/2019	N/A				
3	72.00	02/18/2019	6.00	02/18/2019	N/A				
4	70.00	02/25/2019	6.00	02/25/2019	N/A				
5					N/A				

No monthly injectate samples required.

Northern (Cunningham) #3 02/2019

Quarterly Injectate Samples

Quarter 1
Date Sample Collected 01/30/2019
Kansas Lab Certificate Number
Lab Name

These samples shall be representative of injection activity and shall therefore be collected on days of injection.

Constituent	Value	Units
Calcium	2,260.000	mg/l
Chloride	27,300.000	mg/l
Conductivity	73.700	Mmhos
Magnesium	535.000	mg/l
Sodium	15,700.000	mg/l
Sulfate	2,330.000	mg/l
Total Alkalinity as CaCO3	263.000	mg/l
Total Dissolved Solids	110,000.000	mg/l
Total Suspended Solids	27.600	mg/l