**Facility Well Name** Northern (Bushton) #1 **UIC Permit #** KS-01-159-003 **Month** March **Year** 2019

**Submitted** 06/01/2019 **Approved** 06/04/2019 **KOLAR Document ID** 1458012

# Class I-V Injection Well Monthly Monitoring

## Summary of Monthly Report

**Number of days injection occurred:** 28

**Barrels per Day Maximum:** 3,840

| | | | 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** | 123 | 0.05 | 98 | 99 | -23.1 | -24.9 | 0 |
| **Monthly Maximum** | 288 | 1.50 | 102 | 104 | -18.0 | -22.0 | 0 |
| **Monthly Minimum** | 0 | 0.00 | 91 | 92 | -26.0 | -27.0 | 0 |
| **Monthly Total** | 3,809 | | | | | | 0 |

## Summary of Continuous Recorder Data

| Maximum Annulus Pressure psig | Minimum Annulus Pressure psig | Maximum Injection Pressure psig | Minimum Injection Pressure psig |
|---|---|---|---|
| 108.00 | 87.00 | -26.00 | -23.00 |

**Comments:**

28th and 29th power outage

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# Daily Recorder Data

| Day | Time<br>24 hr | Injection Volume<br>Barrels Per Day | Injection Rate<br>Barrels Per Minute | Annulus Pressure (Gauge)<br>psig | Annulus Pressure (Continuous Recorder)<br>psig | Injection Pressure (Gauge)<br>+ / - | Injection Pressure (Continuous Recorder)<br>+ / - | Seal Pot Fluid Level<br>inches | Type of Fluid Added to Seal Pot | Amount of Fluid Added to Seal Pot<br>gallons | Initials of Collector of Field Recordings | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11:00 | 81.90 | 1.50 | 99 | 99.0 | -24 | -25.0 | 5 | N/A | 0 | RB | | |
| 2 | 10:30 | 154.38 | 0.00 | 97 | 97.0 | -25 | -26.0 | 5 | N/A | | RB | | |
| 3 | 14:00 | 155.69 | 0.00 | 95 | 96.0 | -25 | -26.0 | 4 | N/A | | MW | | |
| 4 | 11:45 | 157.43 | 0.00 | 91 | 92.0 | -24 | -25.0 | 4 | N/A | | LM | | |
| 5 | 08:00 | 54.86 | 0.00 | 94 | 96.0 | -25 | -26.0 | 4 | N/A | 0 | LM | | |
| 6 | 08:00 | 157.69 | 0.00 | 95 | 95.0 | -25 | -26.0 | 4 | N/A | 0 | LM | | |
| 7 | 08:00 | 157.57 | 0.00 | 92 | 94.0 | -24 | -25.0 | 3 | N/A | 0 | LM | | |
| 8 | 06:00 | 78.10 | 0.00 | 93 | 99.0 | -23 | -25.0 | 5 | N/A | 0 | MU | | |
| 9 | 06:00 | 156.12 | 0.00 | 98 | 99.0 | -24 | -24.0 | 4 | N/A | 0 | MU | | |
| 10 | 07:00 | 158.29 | 0.00 | 95 | 96.0 | -23 | -25.0 | 4 | N/A | 0 | MU | | |
| 11 | 15:35 | 156.69 | 0.00 | 100 | 101.0 | -25 | -27.0 | 4 | N/A | 0 | TS | | |
| 12 | 09:35 | 78.81 | 0.00 | 101 | 102.0 | -26 | -26.0 | 4 | N/A | 0 | TS | | |
| 13 | 08:35 | 181.10 | 0.00 | 100 | 101.0 | -22 | -24.0 | 4 | N/A | 0 | MW | | |
| 14 | 10:00 | 160.71 | 0.00 | 98 | 99.0 | -23 | -25.0 | 4 | N/A | 0 | TS | | |
| 15 | 12:30 | 157.14 | 0.00 | 100 | 101.0 | -23 | -25.0 | 4 | N/A | 0 | MW | | |
| 16 | 11:10 | 156.50 | 0.00 | 98 | 99.0 | -23 | -25.0 | 4 | N/A | 0 | RB | | |
| 17 | 11:15 | 78.40 | 0.00 | 100 | 99.0 | -23 | -25.0 | 4 | N/A | 0 | RB | | |
| 18 | 06:00 | 155.93 | 0.00 | 95 | 95.0 | -23 | -25.0 | 3 | N/A | 0 | MU | | |
| 19 | 06:00 | 78.83 | 0.00 | 101 | 101.0 | -23 | -25.0 | 5 | N/A | 0 | MU | | |
| 20 | 06:00 | 156.33 | 0.00 | 100 | 101.0 | -23 | -25.0 | 4 | N/A | 0 | MU | | |
| 21 | 06:00 | 104.36 | 0.00 | 100 | 101.0 | -23 | -25.0 | 5 | N/A | 0 | MU | | |
| 22 | 12:00 | 155.48 | 0.00 | 101 | 103.0 | -23 | -25.0 | 5 | N/A | 0 | LM | | |
| 23 | 10:30 | 155.83 | 0.00 | 100 | 101.0 | -23 | -25.0 | 5 | N/A | 0 | LM | | |
| 24 | 11:00 | 160.50 | 0.00 | 95 | 96.0 | -23 | -25.0 | 3 | N/A | 0 | LM | | |
| 25 | 08:00 | 82.52 | 0.00 | 100 | 101.0 | -23 | -25.0 | 4 | N/A | 0 | TM | | |
| 26 | 11:40 | 189.29 | 0.00 | 101 | 102.0 | -23 | -25.0 | 4 | N/A | 0 | RB | | |
| 27 | 08:30 | 287.52 | 0.00 | 102 | 103.0 | -24 | -25.0 | 4 | N/A | 0 | RB | | |
| 28 | 11:30 | 0.67 | 0.00 | 101 | 103.0 | -21 | -23.0 | 4 | N/A | 0 | RB | | |
| 29 | 08:30 | 0.00 | 0.00 | 100 | 103.0 | -18 | -23.0 | 5 | N/A | 0 | TS | | |
| 30 | 10:15 | 0.00 | 0.00 | 101 | 104.0 | -20 | -24.0 | 4 | N/A | 0 | TS | | |
| 31 | 07:45 | 0.00 | 0.00 | 102 | 103.0 | -20 | -22.0 | 4 | N/A | 0 | TS | | |

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# 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 | 52.00 | 03/05/2019 | 7.48 | 03/05/2019 | N/A | | | | |
| 2 | 55.00 | 03/12/2019 | 7.07 | 03/12/2019 | N/A | | | | |
| 3 | 55.00 | 03/20/2019 | 7.36 | 03/20/2019 | N/A | | | | |
| 4 | 58.00 | 03/26/2019 | 7.35 | 03/26/2019 | N/A | | | | |
| 5 | | | | | N/A | | | | |

## No monthly injectate samples required.

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# Quarterly Injectate Samples

**Quarter** 1
**Date Sample Collected** 01/29/2019
**Kansas Lab Certificate Number** 1120146
**Lab Name**

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

| Constituent | Value | Units |
|---|---|---|
| Calcium | 49.000 | mg/l |
| Chloride | 307.000 | mg/l |
| Iron | 1.200 | mg/l |
| Magnesium | 6.360 | mg/l |
| Sulfate | 22.300 | mg/l |
| Total Dissolved Solids | 912.000 | mg/l |
| Total Alkalinity as CaCO3 | 274.000 | mg/l (as CaCO3) |
| Total Hardness as CaCO3 | 149.000 | mg/l (as CaCO3) |
| Conductivity | 162.000 | Mmhos |
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