

State of Colorado  
Oil and Gas Conservation Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
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FOR OGCC USE ONLY

Document Number:

401405182

Date Received:

09/19/2017

## UNDERGROUND INJECTION FORMATION PERMIT APPLICATION

Per Rule 325, this form shall be submitted with all required attachments.

A Form 31 – Intent shall be submitted and approved prior to completing an injection zone.

A Form 31 – Subsequent shall be submitted following collection of water samples and injectivity test (if performed) and must be approved prior to injection in any new injection facility.

NOTE: Per Rule 324B, an aquifer exemption is required for any injection formation with water quality less than 10,000 mg/L total dissolved solids (TDS). Contact the Commission for further requirements if the TDS as determined by water analysis for the injection zone is less than 10,000 mg/L.

Form 31 Type

☐

Intent

☒

Subsequent

UIC Facility ID

160007

UIC Facility ID Required for Subsequent  
Form 31

## UIC FACILITY INFORMATION

Facility Name and Number: Quiver Unit

County: KIOWA

Facility Location: S2N2S2 / 1 / 17S / 48W / 6

Field Name and Number:

QUIVER

70900

Facility Type: ☒ Enhanced Recovery☐

Disposal

☐

Simultaneous Disposal

Single or Multiple Well Facility?

☐

Single

☒

Multiple

Proposed Injection Program (Required):

The Quiver Unit #1 has been injecting into the Spergen formation since July 2001, classified as a saltwater disposal well. With the unitization of the Quiver Field, it will now be reclassified as an enhanced recovery injection well. Our plans for implementing additional waterflood operations are as follows: 1. Convert the Quiver Unit #2 to a Spergen injection well. 2. Recomplete the shut-in Quiver Unit #5 to the St. Louis formation. This will test the viability of this zone as a productive zone which may contribute to the production in the future unit. 3. Recomplete the Quiver Unit #10 to the St. Louis zone if the Quiver Unit #5 recompletion is successful. The Quiver Unit #5 would then be evaluated as a potential St. Louis injection well. 4. Convert the Quiver Unit #4 to injection in the Spergen and possibly the St. Louis as well. 5. Restore the temporarily abandoned Quiver Unit #8 to production after the Quiver Unit #4 begins water injection.

## OPERATOR INFORMATION

OGCC Operator Number: 61250

Name of Operator: MULL DRILLING COMPANY INC

Address: 1700 N WATERFRONT PKWY B#1200

City: WICHITA State: KS Zip: 67206-6637

Contact Name and Telephone:

Name: Mark Shreve

Phone: (316) 264-6366 Fax: (316) 264-6440

Email: mshreve@mulldrilling.com

## INJECTED FLUID TYPE

All injected fluids must be Exempt E&amp;P waste per RCRA Subpart C.

(Check all that apply.)

☒

Produced Water

☐

Natural Gas

☐

CO2

☐

Drilling Fluids

☐

Exempt Gas Plant Waste

☐

Used Workover Fluids

☐

Flowback Fluids

☐

Other Fluids (describe):

Commercial Disposal Facility

☐

Yes

☒

No

Commercial UIC Bond Surety ID:

Commercial Facility Description: Describe the physical region of the facility, the details of the operations, and the type of fluids to be injected.

### PROPOSED INJECTION FORMATIONS

FORMATION (Name): MISSISSIPPIAN-ST LOUIS Porosity: 20 %  
Formation TDS: 15500 mg/L Frac Gradient: \_\_\_\_\_ psi/ft Permeability: \_\_\_\_\_ mD  
Proposed Stimulation Program: ☐ Acid ☐ Frac Treatment ☒ None

FORMATION (Name): MISSISSIPPIAN-SPERGEN Porosity: 14 %  
Formation TDS: 28600 mg/L Frac Gradient: \_\_\_\_\_ psi/ft Permeability: \_\_\_\_\_ mD  
Proposed Stimulation Program: ☐ Acid ☐ Frac Treatment ☒ None

### ANTICIPATED FACILITY OPERATIONS CONDITIONS

Under normal operating conditions, estimated TOTAL fluid injection rates and pressures for this facility:

FOR WATER: Daily Injection Rate Range From 600 to 2500 bbls/day  
Surface Injection Pressure Range From 100 to 500 psi  
FOR GAS: Daily Injection Rate Range From \_\_\_\_\_ to \_\_\_\_\_ mcf/day  
Surface Injection Pressue Range From \_\_\_\_\_ to \_\_\_\_\_ psi

Estimated Initial Injection Date: 6/1/2017

### AREA OF REVIEW OIL and GAS WELL EVALUATION SUMMARY

Review all existing wells within 1/2 mile for injection formation isolation.

Area Review Date: 5/25/2017

Total number of Oil & Gas Wells within Area of Review: 22

ABANDONED WELLS (All wells that have been plugged: PA and DA status))

Total within Area of Review	<u>10</u>
Number To Be Re-Plugged	<u>0</u>

ACTIVE WELLS (All wells that have not been plugged: AC, DG, DM, IJ, PR, SU, SI, TA, WO, XX, UN status)

Total within Area of Review	<u>12</u>
Number Requiring Casing Repair	<u>0</u>
Number To Be Plugged	<u>0</u>

Operator's Area of Review Contact Email: mshreve@mulldrilling.com

☐ No Wells within 2,640'

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Risa Carter

Signed: \_\_\_\_\_

Title: Production Tech.

Date: 9/19/2017 3:15:46 PM

COGCC Approved: \_\_\_\_\_

Date: 10/03/2017

Form 31 - Intent Expiration Date: 04/03/2018

Per Rule 325.o, a 90 day extension of the Expiration Date may be requested via a Sundry Notice, Form 4 submitted prior to Form 31- Intent expiration

Order Number: 560-1

UIC FACILITY ID: 160007

**CONDITIONS OF APPROVAL, IF ANY:**

**COA Type**

**Description**

	If the USGS detects a seismic event of Richter Magnitude 2.5 or higher that occurs within a 5 mile radius of the Quiver Field the operator is required to contact COGCC to discuss and determine if action is required.
	If operator wishes to inject at a rate higher than 2,500 barrels/day they must contact COGCC and make an application via a Form 4-Sundry Notice.
	Within thirty (30) days of the commencement of injection operator is required to file a Form 5A-Completed Interval Report: a. Notifying COGCC of the initial injection date, and b. Updating COGCC on the status of the well and formation(s) or injection zone(s) used for Form 7 reporting.
	Operator is required to perform additional Mechanical Integrity Tests ("MITs") at five (5) year intervals starting from the first test date reported here. If the downhole well configuration is changed at any time a new MIT must be passed before the well is returned to injection. All injection well MITs must be witnessed by COGCC.
	Operator is required to file a Form 4-Sundry Notice with analysis of injected water collected one year after the initial injection date. Minimum analyses are TDS, major cations, and major anions. Data may also be submitted to COGCC Database in Electronic Data Deliverable (EDD) format. After the initial 1-year analysis, the analysis shall be repeated at five (5) year intervals.

**Attachment Check List**

**Att Doc Num**

**Name**

2618712	HYDROLOGIC EVALUATION-DWR
2618713	SEISMIC EVALUATION-COGCC
401405182	FORM 31-SUBSEQUENT-SUBMITTED
401407121	ANALYSIS OF INJECTION WATER
401407712	WELLBORE DIAGRAM-CURRENT

Total Attach: 5 Files

**General Comments**

**User Group**

**Comment**

**Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)