

State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303) 894-2100 Fax: (303) 894-2109



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 [X] 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: [X] Enhanced Recovery [] Disposal [] Simultaneous Disposal
Single or Multiple Well Facility? [] Single [X] 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 Contact Name and Telephone:
Name of Operator: MULL DRILLING COMPANY INC Name: Mark Shreve
Address: 1700 N WATERFRONT PKWY B#1200 Phone: (316) 264-6366 Fax: (316) 264-6440
City: WICHITA State: KS Zip: 67206-6637 Email: mshreve@mulldrilling.com

INJECTED FLUID TYPE

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

(Check all that apply.)

- [X] Produced Water [] Natural Gas [] CO2 [] Drilling Fluids
[] Exempt Gas Plant Waste [] Used Workover Fluids [] Flowback Fluids

[] Other Fluids (describe):

Empty text box for describing other fluids.

Commercial Disposal Facility [] Yes [X] 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:

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

Total within Area of Review	10
Number To Be Re-Plugged	0

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	12
Number Requiring Casing Repair	0
Number To Be Plugged	0

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:

<u>COA Type</u>	<u>Description</u>
	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

<u>Att Doc Num</u>	<u>Name</u>
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

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)