



Colorado SCANNED



RECEIVED NOV 18 2014 COGCC

Complete the Attachment Checklist Oper OGCC

Oil and Gas Conservation Commission

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

UNDERGROUND INJECTION FORMATION PERMIT APPLICATION

- 1. Submit original and one copy of this form.
2. If data on this form is estimated, indicate as such.
3. Attachments - see checklist and explanation of attachments.
4. Aquifer exemption is required for all injection formations with water quality <10,000 TDS (Rule 322B).
5. Attach a copy of the certified receipt to each notice to surface and mineral owner(s) or submit a sample copy of the notice and an affidavit of mailing or delivery with names and addresses of those notified.

Checklist table with 10 rows and 2 columns: Attachment Name, Status (checked/unchecked)

Project Name: Wildhorse 16-13L SWD Project Location: NWSW S16 T9N R59W
Project Type: [ ] Enhanced Recovery [x] Disposal [ ] Simultaneous Disposal
Single or Multiple Well Facility? [x] Single [ ] Multiple
IF UNIT OPERATIONS, ATTACH PLAT SHOWING UNIT AREA
County: Weld Field Name and Number: Wildcat 99999

OGCC Operator Number: 96155
Name of Operator: Whiting Oil & Gas
Address: 1700 Broadway, Suite 2300
City: Denver State: CO Zip: 80290
Contact Name and Telephone: Charles Ohlson
No: (303) 390-4905
Fax: (303) 390-4039

Injection Fluid Type: [x] Produced Water [ ] Natural Gas [ ] CO2 [ ] Drilling Fluids
[ ] Exempt Gas Plant Waste [ ] Used Workover Fluids [ ] Other Fluids (describe):
Commercial Facility? [ ] Yes [x] No
If Yes, describe area of operation and types of fluids to be injected at this facility:

PROPOSED INJECTION FORMATIONS
FORMATION A (Name): Entrada Porosity: 16%
Formation TDS: 12,310 mg/L Frac Gradient: 0.75 psi/ft Permeability: 34 mD
Proposed Stimulation Program: [x] Acid [ ] Frac Treatment [ ] None
FORMATION B (Name): Upper Lyons Porosity: 5%
Formation TDS: 14,860 mg/L Frac Gradient: 0.75 psi/ft Permeability: 0.7 mD
Proposed Stimulation Program: [x] Acid [ ] Frac Treatment [ ] None
Anticipated Project Operating Conditions
Under normal operating conditions, estimated fluid injection rates and pressures:
FOR WATER: A minimum of 4,300 bbls/day @ 100 psi to a maximum of 12,240 bbls/day @ 3070 psi.
FOR GAS: A minimum of 0 mcf/day @ 0 psi to a maximum of 0 bbls/day @ 0 psi.

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.
Print Name: Charles Ohlson Signed: Charles Ohlson
Title: Sr. Operations Engineer Date: 11/14/2014
OGCC Approved: [Signature] Title: UIC-Lead Date: 10/1/2015
Order No: UIC FACILITY NO: 159962

CONDITIONS OF APPROVAL, IF ANY:
See Attached Sheet

State of Colorado  
**Oil and Gas Conservation Commission**



FOR OGCC USE ONLY  
**RECEIVED**  
NOV 18 2014  
**OGCC**  
Attachment Checklist

**UNDERGROUND INJECTION FORMATION PERMIT APPLICATION**

1. Submit original and one copy of this form.
2. If data on this form is estimated, indicate as such.
3. Attachments – see checklist and explanation of attachments.
4. Aquifer exemption is required for all injection formations with water quality <10,000 TDS (Rule 322B). Immediately contact the Commission for further requirements if the total dissolved solids (TDS) as determined by water analysis for the injection zone is less than 10,000 ppm.
5. Attach a copy of the certified receipt to each notice to surface and mineral owner(s) or submit a sample copy of the notice and an affidavit of mailing or delivery with names and addresses of those notified. Each person notified shall be specified as either a surface or mineral owner as defined by C.R.S. 34-60-103(7).

Form 31 Original & 1 Copy	✓
Analysis of Injection Zone Water	✓
Analysis of Injection Water	✓
Proposed Injection Program	✓
Resistivity or Induction Log	✓
Cement Bond Log	✓
Surface or Salt Water Displ Agrmt	✓
Notice to Surface/Mineral Owners	✓
Remedial Correction Plan for Wells	✓
Map Oil/Water Wells w/in 1/4 Mile	✓
List Oil/Gas Wells w/in 1/2 Mile	✓
Map Surface Owners w/in 1/4 Mile	✓
List Surface Owners w/in 1/4 Mile	✓
Map Mineral Owners w/in 1/4 Mile	✓
List Mineral Owners w/in 1/4 Mile	✓
Surface Facility Diagram	✓
Wellbore Diagram	✓
If Commercial Facility, Description of Ops & Area Served	
Unit Area Plat	✓

Project Name: Wildhorse 16-13L Project Location: NWSW S16 T9N R59W  
 Project Type:  Enhanced Recovery  Disposal  Simultaneous Disposal  
 Single or Multiple Well Facility?  Single  Multiple  
 IF UNIT OPERATIONS, ATTACH PLAT SHOWING UNIT AREA  
 County: Weld Field Name and Number: Wildcat 99999

OGCC Operator Number: 96155 Contact Name and Telephone: Charles Ohlson  
 Name of Operator: Whiting Oil & Gas No: (303) 390-4905  
 Address: 1700 Broadway, Suite 2300 Fax: (303) 390-4039  
 City: Denver State: CO Zip: 80290

Injection Fluid Type:  Produced Water  Natural Gas  CO<sub>2</sub>  Drilling Fluids  
 Exempt Gas Plant Waste  Used Workover Fluids  Other Fluids (describe): \_\_\_\_\_  
 Commercial Facility?  Yes  No  
 If Yes, describe area of operation and types of fluids to be injected at this facility:

**PROPOSED INJECTION FORMATIONS**  
 FORMATION A (Name): Lower Lyons Porosity: 9%  
 Formation TDS: 20,010 mg/L Frac Gradient: 0.75 psi/ft Permeability: 10 mD  
 Proposed Stimulation Program:  Acid  Frac Treatment  None  
 FORMATION B (Name): \_\_\_\_\_ Porosity: \_\_\_\_\_  
 Formation TDS: \_\_\_\_\_ Frac Gradient: \_\_\_\_\_ Permeability: \_\_\_\_\_  
 Proposed Stimulation Program:  Acid  Frac Treatment  None  
**Anticipated Project Operating Conditions**  
 Under normal operating conditions, estimated fluid injection rates and pressures:  
 FOR WATER: A minimum of 4,300 bbls/day @ 100 psi to a maximum of 12,240 bbls/day @ 3,070 psi.  
 FOR GAS: A minimum of 0 mcf/day @ 0 psi to a maximum of 0 bbls/day @ 0 psi.

2390 RPK  
9/24/2015

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.  
 Print Name: Charles Ohlson Signed: Charles Ohlson  
 Title: Sr. Operations Engineer Date: 11/14/2014  
 OGCC Approved: [Signature] Title: UIC-Genl Date: 10/1/2015  
 Order No: \_\_\_\_\_ **UIC FACILITY NO: 159962**

CONDITIONS OF APPROVAL, IF ANY:  
See Attached Sheet

Conditions of Approval (COAs) and General Comments from PDF versions of approved forms.

Whiting Oil & Gas Corporation  
Wildhorse 16-13L  
NWSW 16-9N-59W  
Weld County, Colorado  
API: 05-123-37374

---

Form 31 Underground Injection Formation Permit Application Doc # 2493726

**COAs:**

A water analysis to include TDS, major cations, and major anions is required 1- year after initial injection and from then on at 5-year intervals. Water analyses should be submitted via Sundry Notice and in Electronic Data Deliverable (EDD) Format.

Operator is required to install a seismometer at a location to be determined by the operator and COGCC from which seismic activity in the vicinity of the injection well can be monitored. The operator will be responsible for maintenance of the seismometer. Data gathered by the seismometer will be made available to one or more third parties (such as the USGS, CU-Boulder, CSM, or CSU) for analysis.

Initial maximum daily injection rate limited to 10,000 bbl/day. Operator must request increase above that. Request will be evaluated based on existing daily injection rate and seismic activity within 2.5 miles of the injection well.

**General Comments:**

None

---

Form 33 Underground Well Permit Application Doc # 2493727

**COA:**

Form 7 reporting to be done using Denver Basing Combined Disposal Zone = DJINJ.

**General Comments:**

Submit Form 5A upon initial injection to report initial injection date and update well and formation status for Scout Card. (Should have been a COA.)

Bridge plug at 8510 ft cemented with 3 sx is effective PBT. See Form 5A Doc # 400743110, submitted 6/17/2015. Tubing diameter and depth, and packer depth, taken from Form 21 MIT Doc # 400839263, submitted 5/18/2015.