

FORM
2

Rev
08/13

State of Colorado

Oil and Gas Conservation Commission

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



Document Number:

400538754

Date Received:

01/17/2014

APPLICATION FOR PERMIT TO:

☒ Drill ☐ Deepen ☐ Re-enter ☐ Recomplete and Operate

TYPE OF WELL OIL ☒ GAS ☐ COALBED ☐ OTHER _____

Refiling ☐

ZONE TYPE SINGLE ZONE ☒ MULTIPLE ZONES ☐ COMMINGLE ZONES ☐

Sidetrack ☐

Well Name: PIRTLAW PARTNERS LTD

Well Number: 34-11

Name of Operator: QUICKSILVER RESOURCES INC

COGCC Operator Number: 10255

Address: 801 CHERRY ST - #3700 UNIT 19

City: FT WORTH

State: TX

Zip: 76102

Contact Name: Cindy Keister

Phone: (817)665-5572

Fax: (817)665-5009

Email: ckeister@qvinc.com

RECLAMATION FINANCIAL ASSURANCE

Plugging and Abandonment Bond Surety ID: 20080107

WELL LOCATION INFORMATION

QtrQtr: SW/SE Sec: 11 Twp: 7N Rng: 87W Meridian: 6

Latitude: 40.571727

Longitude: -107.113256

Footage at Surface: 177 feet FNL/FSL FSL 1913 feet FEL/FWL FEL

Field Name: BEAR RIVER

Field Number: 5950

Ground Elevation: 8164

County: ROUTT

GPS Data:

Date of Measurement: 10/28/2013 PDOP Reading: 1.8 Instrument Operator's Name: Gordon Dowling

If well is ☒ Directional ☐ Horizontal (highly deviated) **submit deviated drilling plan.**

Footage at Top of Prod Zone: FNL/FSL FEL/FWL Bottom Hole: FNL/FSL FEL/FWL

620 FSL 1597 FEL 2005 FSL 608 FEL
Sec: 11 Twp: 7N Rng: 87W Sec: 11 Twp: 7N Rng: 87W

LOCATION SURFACE & MINERALS & RIGHT TO CONSTRUCT

Surface Ownership: ☒ Fee ☐ State ☐ Federal ☐ Indian

The Surface Owner is: ☒ is the mineral owner beneath the location.

(check all that apply)

☒ is committed to an Oil and Gas Lease.

☒ has signed the Oil and Gas Lease.

☐ is the applicant.

The Mineral Owner beneath this Oil and Gas Location is: ☒ Fee ☐ State ☐ Federal ☐ Indian

The Minerals beneath this Oil and Gas Location will be developed by this Well: Yes

The right to construct the Oil and Gas Location is granted by: oil and gas lease

Surface damage assurance if no agreement is in place:

Surface Surety ID:

LEASE INFORMATION

Using standard QtrQtr, Sec, Twp, Rng format, describe one entire mineral lease that will be produced by this well (Describe lease beneath surface location if produced. Attach separate description page or map if necessary.)

See attached lease description and map.

Total Acres in Described Lease: 2415 Described Mineral Lease is: ☒ Fee ☐ State ☐ Federal ☐ Indian

Federal or State Lease #

Distance from Completed Portion of Wellbore to Nearest Lease Line of described lease: 608 Feet

CULTURAL DISTANCE INFORMATION

Distance to nearest:

Building: 5280 Feet

Building Unit: 5280 Feet

High Occupancy Building Unit: 5280 Feet

Designated Outside Activity Area: 5280 Feet

Public Road: 5280 Feet

Above Ground Utility: 5280 Feet

Railroad: 5280 Feet

Property Line: 3600 Feet

INSTRUCTIONS:

- All measurements shall be provided from center of the Proposed Well to nearest of each cultural feature as described in Rule 303.a.(5).
- Enter 5280 for distance greater than 1 mile.
- Building - nearest building of any type. If nearest Building is a Building Unit, enter same distance for both.
- Building Unit, High Occupancy Building Unit, and Designated Outside Activity Area - as defined in 100-Series Rules.

DESIGNATED SETBACK LOCATION INFORMATION

Check all that apply. This location is within a: ☐ Buffer Zone ☐ Exception Zone ☐ Urban Mitigation Area

- Buffer Zone – as described in Rule 604.a.(2), within 1,000' of a Building Unit
- Exception Zone - as described in Rule 604.a.(1), within 500' of a Building Unit.
- Urban Mitigation Area - as defined in 100-Series Rules.

Pre-application Notifications (required if location is within 1,000 feet of a building unit):

Date of Rule 305.a.(1) Urban Mitigation Area Notification to Local Government:

Date of Rule 305.a.(2) Buffer Zone Notification to Building Unit Owners:

SPACING and UNIT INFORMATION

Distance from Completed Portion of Wellbore to Nearest Wellbore Permitted or Completed in the same formation: 5566 Feet

Distance from Completed Portion of Wellbore to Nearest Unit Boundary Feet (Enter 5280 for distance greater than 1 mile.)

Federal or State Unit Name (if appl): Unit Number:

SPACING & FORMATIONS COMMENTS

OBJECTIVE FORMATIONS

| Objective Formation(s) | Formation Code | Spacing Order Number(s) | Unit Acreage Assigned to Well | Unit Configuration (N/2, SE/4, etc.) |
|------------------------|----------------|-------------------------|-------------------------------|--------------------------------------|
| FRONTIER | FRTR | | | |
| NIOBRARA | NBRR | | | |

DRILLING PROGRAM

Proposed Total Measured Depth: 7195 Feet

Distance to nearest permitted or existing wellbore penetrating objective formation: 5566 Feet (Including plugged wells)

Will a closed-loop drilling system be used? Yes

Is H₂S gas reasonably expected to be encountered during drilling operations at concentrations greater than or equal to 100 ppm? No (If Yes, attach an H₂S Drilling Operations Plan)

Will salt sections be encountered during drilling? No

Will salt based (>15,000 ppm Cl) drilling fluids be used? Yes

Will oil based drilling fluids be used? Yes

BOP Equipment Type: ☒ Annular Preventor ☒ Double Ram ☒ Rotating Head ☐ None

GROUNDWATER BASELINE SAMPLING AND MONITORING AND WATER WELL SAMPLING

Water well sampling required per Rule 609

DRILLING WASTE MANAGEMENT PROGRAM

Drilling Fluids Disposal: OFFSITE Drilling Fluids Disposal Methods: Commercial Disposal

Cuttings Disposal: OFFSITE Cuttings Disposal Method: Commercial Disposal

Other Disposal Description:

Beneficial reuse or land application plan submitted?

Reuse Facility ID: or Document Number:

CASING PROGRAM

| Casing Type | Size of Hole | Size of Casing | Wt/Ft | Csg/Liner Top | Setting Depth | Sacks Cmt | Cmt Btm | Cmt Top |
|-------------|--------------|----------------|-------|---------------|---------------|-----------|---------|---------|
| CONDUCTOR | | 20 | | 0 | 40 | | | |
| SURF | 17+1/2 | 13+3/8 | 68 | 0 | 1200 | 825 | 1200 | 0 |
| 1ST | 12+1/4 | 9+5/8 | 40 | 0 | 4300 | 600 | 4300 | 0 |
| 2ND | 8+3/4 | 5+1/2 | 17 | 0 | 7195 | 660 | 7195 | 3300 |

☐ Conductor Casing is NOT planned

DESIGNATED SETBACK LOCATION EXCEPTIONS

Check all that apply:

- ☐ Rule 604.a.(1)A. Exception Zone (within 500' of Building Unit)
- ☐ Rule 604.b.(1)A. Exception Location (existing or approved Oil & Gas Location now within a Designated Setback as a result of Rule 604.a.)
- ☐ Rule 604.b.(1)B. Exception Location (existing or approved Oil & Gas Location is within a Designated Setback due to Building Unit construction after Location approval)
- ☐ Rule 604.b.(2) Exception Location (SUA or site-specific development plan executed on or before August 1, 2013)
- ☐ Rule 604.b.(3) Exception Location (Building Units constructed after August 1, 2013 within setback per an SUA or site-specific development plan)

GREATER WATTENBERG AREA LOCATION EXCEPTIONS

Check all that apply:

- ☐ Rule 318A.a. Exception Location (GWA Windows).
- ☐ Rule 318A.c. Exception Location (GWA Twinning).

RULE 502.b VARIANCE REQUEST

☐ Rule 502.b. Variance Request from COGCC Rule or Spacing Order Number

OTHER LOCATION EXCEPTIONS

Check all that apply:

- ☐ Rule 318.c. Exception Location from Rule or Spacing Order Number _____
- ☐ Rule 603.a.(2) Exception Location (Property Line Setback).

ALL exceptions and variances require attached Request Letter(s). Refer to applicable rule for additional required attachments (e.g. waivers, certifications, SUAs).

OPERATOR COMMENTS AND SUBMITTAL

Comments _____

This application is in a Comprehensive Drilling Plan _____ CDP #: _____

Location ID: _____

Is this application being submitted with an Oil and Gas Location Assessment application? _____ Yes

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

Signed: _____ Print Name: Cindy Keister

Title: Dir. Regulatory Affairs Date: 1/17/2014 Email: ckeister@qrenc.com

Operator must have a valid water right or permit allowing for industrial use or purchased water from a seller that has a valid water right or permit allowing for industrial use, otherwise an application for a change in type of use is required under Colorado law. Operator must also use the water in the location set forth in the water right decree or well permit, otherwise an application for a change in place of use is required under Colorado law. Section 37-92-103(5), C.R.S. (2011).

Based on the information provided herein, this Application for Permit-to-Drill complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved:  _____ Director of COGCC Date: 6/6/2014

Expiration Date: 06/05/2016

API NUMBER

05 107 06262 00

Conditions Of Approval

All representations, stipulations and conditions of approval stated in the Form 2A for this location shall constitute representations, stipulations and conditions of approval for this Form 2 Permit-to-Drill and are enforceable to the same extent as all other representations, stipulations and conditions of approval stated in this Permit-to-Drill.

COA Type

Description

| | |
|--|--|
| | <p>(1) COMPLIANCE WITH THE MOST CURRENT REVISION OF THE NORTHWEST COLORADO NOTIFICATION POLICY IS REQUIRED. SEE ATTACHED NOTICE.</p> <p>(2) INTERMEDIATE CASING (9-5/8" FIRST STRING) CEMENT MUST PROVIDE COVERAGE OF ALL CRETACEOUS FORMATIONS PENETRATED BY THE INTERMEDIATE HOLE. INTERMEDIATE CASING (9-5/8" FIRST STRING) CEMENT SHALL LAP A MINIMUM OF 200' INTO THE SURFACE CASING, AND INTERMEDIATE CASING (9-5/8" FIRST STRING) CEMENT COVERAGE VERIFICATION BY CBL IS REQUIRED.</p> <p>(3) A TOTAL OF 660 SX CEMENT IS SPECIFIED FOR THE PRODUCTION CASING (5-1/2" SECOND STRING), BUT THE OPERATOR'S WELLBORE DIAGRAM DRILLING PLAN INDICATES (255 SX LEAD PLUS 835 SX TAIL FOR A TOTAL OF 1090 SX CEMENT). ADJUST PRODUCTION CASING CEMENT PROGRAM AS NECESSARY TO ACHIEVE DESIRED TOC OF 3300'. PRODUCTION CASING (5-1/2" SECOND STRING) CEMENT COVERAGE VERIFICATION BY CBL IS REQUIRED.</p> |
| | Open hole resistivity and gamma logs shall be run to describe the stratigraphy of the entire well bore and to adequately verify the setting depth of surface casing and aquifer coverage. On a multi-well pad, these open hole logs are only required on one of the first wells drilled on the pad and the Drilling Completion Report - Form 5 for every well on the pad shall identify which well was logged. |

Best Management Practices

No BMP/COA Type

Description

| | | |
|---|-------------------------------------|---|
| 1 | Community Outreach and Notification | Quicksilver complies with the most current revision of the Northwest Colorado Notification Policy. |
| 2 | Drilling/Completion Operations | Quicksilver will provide cement coverage from the intermediate casing shoe to a minimum of 200' above the top of the Niobrara Formation and verify cement with a cement bond log. |
| 3 | Drilling/Completion Operations | Quicksilver will ensure that the proposed surface casing is more than 50' below the depth of the deepest water well within 1 mile of the surface location when corrected for elevation differences. |

Total: 3 comment(s)

Applicable Policies and Notices to Operators

NW Colorado Notification Policy.

Notice Concerning Operating Requirements for Wildlife Protection.

Attachment Check List

| <u>Att Doc Num</u> | <u>Name</u> |
|---------------------------|-------------------------|
| 400538754 | FORM 2 SUBMITTED |
| 400539974 | SURFACE AGRMT/SURETY |
| 400539978 | LEGAL/LEASE DESCRIPTION |
| 400539983 | LEASE MAP |
| 400539986 | DEVIATED DRILLING PLAN |
| 400539987 | DRILLING PLAN |
| 400539989 | PLAT |
| 400540013 | DIRECTIONAL DATA |

Total Attach: 8 Files

General Comments

| <u>User Group</u> | <u>Comment</u> | <u>Comment Date</u> |
|--------------------------|--|----------------------------|
| Permit | Final review completed. Numerous LGD comments. | 4/14/2014 6:48:14 AM |
| Permit | Operator corrected distances to the nearest wellbore permitted and penetrated in the same formation. Operator gave a distance of 608' from the nearest lease line. | 4/1/2014 2:16:15 PM |
| Permit | Requested review of the distances to the nearest lease line, the nearest wellbore permitted and penetrating. | 3/31/2014 2:35:13 PM |

| | | |
|---------------------|---|-------------------------|
| LGD | <p>Routt County has a permitting process for all oil/gas operations. The operator is aware that an application must be submitted to Routt County.</p> <p>Routt County has a review process for all county roads used for oil/gas operations. The operator must contact Routt County and comply with road review procedures before operations can be conducted.</p> <p>Routt County requests information from the COGCC after drilling operations are complete for the location of aquifers and show that casing was completed per minimum requirements of the COGCC regulations to protect all aquifers.</p> <p>The access road is proposed to cross a stream and wetlands to access the site. Any access roads and the well pad must have a comprehensive BMP plan and continually monitored for protection of these water sources from erosion and contaminants. Routt County requires waterbody crossing permits. There are also wetlands and a pond at the well pad site. A permit from the Army Corps of Engineers will be required by Routt County before any construction commences.</p> <p>Routt County requests that the COGCC permit require permit holder to comply with air quality standards now under consideration when those standards are adopted.</p> <p>The site is mapped in a high wildfire area. Fire extinguishers or fire suppression equipment should be on-site at all time during operation and maintenance.</p> <p>The site is mapped for wildlife concerns for Elk Winter Range and adjacent to Elk Winter Concentration area. The operator shall comply with all DPW BMP's and Routt County requests that the following additional COA's be placed:</p> <p>-Restrict post-development well site visitations to between the hours of 10 a.m. and 3 p.m. Dec 1 – April 15 and reduce site visitation between December 1st and June 30th to protect elk during critical winter conditions and during elk production.</p> <p>The operator is proposing drilling operations to commence in July 2014. Routt County supports the timing of this drilling which will avoid hunting operations and avoid critical wildlife winter concerns. Routt County does not support drilling after Dec 1st due to elk winter concerns.</p> <p>This well pad site and access road is located in area mapped for geologic concerns (slope failure complex). Construction of the access and well pad should be completed following recommendations from a qualified geologic or geotechnical engineer.</p> | 2/19/2014 1:57:06 PM |
| Permit | Extended Public & LGD comment period end date from 2-6-2014 to 2-16-2014 per LGD request. | 2/6/2014 4:49:12 PM |
| Engineer | NO OFFSET WELLS WITHIN 1500' OF THIS WELLBORE. | 2/4/2014 1:07:52 PM |
| Engineer | THE PROPOSED SURFACE CASING IS MORE THAN 50' BELOW THE DEPTH OF THE DEEPEST WATER WELL WITHIN 1-MILE OF THE SURFACE LOCATION WHEN CORRECTED FOR ELEVATION DIFFERENCES. THE DEEPEST WATER WELL WITHIN 1-MILE IS 490 FEET DEEP. | 2/4/2014 12:58:03 PM |
| Engineer | THE ILES FORMATION/MANCOS FORMATION OUTCROP CONTACT IS PROXIMATE TO THE SURFACE LOCATION FOR THE PIRTLAW PARTNERS LTD 34-11 WELL, AND THEREFORE, THE PROPOSED SURFACE CASING OF 1200' SHOULD PROVIDE COVERAGE OF THE UPPER PORTION OF THE MANCOS FORMATION AND ANY OVERLYING CRETACEOUS FORMATIONS (IF PRESENT). | 2/4/2014 12:57:40 PM |
| Permit | Passed completeness. | 1/17/2014 1:09:22 PM |
| Total: 9 comment(s) | | |