

APPLICATION FOR PERMIT TO:

Drill

 Deepen

 Re-enter

 Recomplete and Operate

| | |
|---|--|
| TYPE OF WELL OIL <input checked="" type="checkbox"/> GAS <input type="checkbox"/> COALBED <input type="checkbox"/> OTHER: _____ | Refiling <input checked="" type="checkbox"/> |
| ZONE TYPE SINGLE ZONE <input checked="" type="checkbox"/> MULTIPLE ZONES <input type="checkbox"/> COMMINGLE ZONES <input type="checkbox"/> | Sidetrack <input type="checkbox"/> |

Date Received:
 09/25/2018

| | |
|--|-------------------------------------|
| Well Name: <u>Kortum LD</u> | Well Number: <u>33-179HC</u> |
| Name of Operator: <u>GREAT WESTERN OPERATING COMPANY LLC</u> | COGCC Operator Number: <u>10110</u> |
| Address: <u>1001 17TH STREET #2000</u> | |
| City: <u>DENVER</u> | State: <u>CO</u> |
| | Zip: <u>80202</u> |
| Contact Name: <u>Geoff Lee</u> | Phone: <u>(720)595-2155</u> |
| | Fax: () |
| Email: <u>glee@gwogco.com</u> | |

RECLAMATION FINANCIAL ASSURANCE
 Plugging and Abandonment Bond Surety ID: 20160041

WELL LOCATION INFORMATION

QtrQtr: NWNE Sec: 21 Twp: 1S Rng: 67W Meridian: 6
 Latitude: 39.957016 Longitude: -104.891703

| | | | | | |
|---------------------|------------|------|-------------|------|------------|
| Footage at Surface: | <u>215</u> | Feet | <u>2070</u> | Feet | <u>FEL</u> |
| | | | | | |

Field Name: WATTENBERG Field Number: 90750
 Ground Elevation: 5188 County: ADAMS

GPS Data: GPS Quality Value: 1.4 Type of GPS Quality Value: PDOP Date of Measurement: 11/21/2016
 Instrument Operator's Name: Jared Christopher G.W.

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

| | | | | | | | | | |
|------------------------------|------------|---------|------------|-----|-------------|-----|------------|-----|------------|
| Footage at Top of Prod Zone: | <u>460</u> | FNL/FSL | <u>515</u> | FNL | <u>2252</u> | FNL | <u>515</u> | FNL | <u>FWL</u> |
| | | | | | | | | | |

Sec: 21 Twp: 1S Rng: 67W Sec: 33 Twp: 1S Rng: 67W

LOCAL GOVERNMENT INFORMATION

County: ADAMS Municipality: N/A

Per § 34-60-106 (1)(f)(I)(A), the following questions pertain to the "local government with jurisdiction to approve the siting of the proposed oil and gas location."

The local government with jurisdiction is: County

Does the local government with jurisdiction regulate the siting of Oil and Gas Locations, with respect to this location? If the local government does regulate the siting, but has waived its right to precede the COGCC in siting determination, indicate by selecting "YES" here and selecting "Waived" for the disposition below.

Yes No

If yes, in checking this box, I hereby certify that an application has been filed with the local government with jurisdiction to approve the siting of the proposed oil and gas location.

The local government siting permit type is: AUSR

The local government siting permit was filed on: 12/05/2018

The disposition of the application filed with the local government is: Approved

Additional explanation of local process:

This permit was filed on 12/5/2018 and approved on 4/24/2019.

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: Surface Use Agreement

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.)

Please see attached lease map.

Total Acres in Described Lease: 327 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: 0 Feet

CULTURAL DISTANCE INFORMATION

Distance to nearest:

Building: 1005 Feet

Building Unit: 1005 Feet

High Occupancy Building Unit: 5280 Feet

Designated Outside Activity Area: 5280 Feet

Public Road: 484 Feet

Above Ground Utility: 3191 Feet

Railroad: 5280 Feet

Property Line: 215 Feet

School Facility: 5192 Feet

School Property Line: 5192 Feet

Child Care Center: 2561 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, Designated Outside Activity Area, School Facility, and Child Care Center – 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: 06/26/2018

SPACING and UNIT INFORMATION

Distance from completed portion of proposed wellbore to nearest completed portion of offset wellbore permitted or completed in the same formation: 206 Feet

Distance from Completed Portion of Wellbore to Nearest Unit Boundary 460 Feet (Enter 5280 for distance greater than 1 mile.)

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

SPACING & FORMATIONS COMMENTS

Great Western has applied for a 1600-acre Drilling and Spacing Unit. Unit acreage is T1S-67W 21: All; 28: All; 33: N2.

If this Form 2 is associated with a Drilling and Spacing Unit application, provide docket number: _____

OBJECTIVE FORMATIONS

| Objective Formation(s) | Formation Code | Spacing Order Number(s) | Unit Acreage Assigned to Well | Unit Configuration (N/2, SE/4, etc.) |
|------------------------|----------------|-------------------------|-------------------------------|--------------------------------------|
| CODELL | CODL | 407-2612 | 1600 | S. 21&28 All; 33: N2 |

DRILLING PROGRAM

Proposed Total Measured Depth: 20859 Feet

Distance from the proposed wellbore to nearest existing or proposed wellbore belonging to another operator, including plugged wells:

Enter distance if less than or equal to 1,500 feet: 145 Feet No well belonging to another operator within 1,500 feet

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? No

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 318A

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 |
|-------------|--------------|----------------|-------|---------------|---------------|-----------|---------|---------|
| SURF | 13+1/2 | 9+5/8 | 36 | 0 | 1700 | 707 | 1700 | 0 |
| 1ST | 8+1/2 | 5+1/2 | 17 | 0 | 20859 | 2206 | 20859 | |

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 well has a bottom-hole location beyond the unit boundary setback. The bottom of the completed interval will be within the unit boundary setback at 2152 FNL and 515' FWL of Section 33. The wellbore beyond the unit boundary setback will be physically isolated and will not be completed.

Distance from completed portion of the wellbore to nearest wellbore permitted or completed well in the same formation was measured to the Kortum LD 33-179HN using horizontal and vertical separation.

The distance from the proposed wellbore to nearest existing or proposed wellbore belonging to another operator, including plugged wells was measured to the Plugged and Abandoned Kortum 5, API No. 05-001-07087, owned by Energy Search.

There are seven additional wells within a 150' horizontal distance from the proposed well which include:
Plugged and Abandoned Kortum 1, API No. 05-001-07083, owned by Adams County.
Plugged and Abandoned Damstedt 4, API No. 05-001-07319, owned by H & R Well Services.
Plugged and Abandoned Damstedt 1, API No. 05-001-06774, owned by H & R Well Services.
Plugged and Abandoned Hardaway 2, API No. 05-001-06794, owned by Berry Energy.
Plugged and Abandoned Robert Hardaway 4, API No. 05-001-06826, owned by Berry Energy
Producing Community 1, API No. 001-07194, owned and operated by KP Kauffman Co.
Shut-In Kortum 12-21, API No. 05-001-09490, owned and operated by Great Western.

The Producing Community 1, API No. 001-07194, owned and operated by KP Kauffman Co. and the Shut-In Kortum 12-21, API No. 05-001-09490, owned and operated by Great Western, will not need stimulation waivers as the treated intervals between the existing wells and the proposed well are well over 150' apart.

Changes to the original APD include; name, BHL and drilling information.

The Exception Location Waiver for Rule 318A.a. and 318A.c. is located in the attached Surface Use Agreement on page 5, section g.

This application is in a Comprehensive Drilling Plan No CDP #: _____

Location ID: 443415

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: Kimberly Rodell

Title: Permit Agent Date: 9/25/2018 Email: krodell@upstreampm.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, applicable orders, and SB 19-181 and is hereby approved.

COGCC Approved:  _____ Director of COGCC Date: 3/30/2020

Expiration Date: 03/29/2022

API NUMBER

05 001 09884 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.

| <u>COA Type</u> | <u>Description</u> |
|--------------------------------|---|
| Drilling/Completion Operations | Drilling Beyond the Unit Boundary Setback: Operator will ensure the wellbore beyond the unit boundary setback is physically isolated and is not completed. In the Operator Comments on the Form 5A the operator will (1) report the footages from the section lines of the bottom of the completed interval, (2) describe how the wellbore beyond the unit boundary setback is physically isolated, and (3) certify that none of the wellbore beyond the setback was completed. |
| Drilling/Completion Operations | 1) Submit Form 42 electronically to COGCC 48 hours prior to MIRU (Spud Notice), for the first well/activity on the pad and provide 48 hour spud notice for all subsequent wells drilled on the pad. 2) Comply with Rule 317.j. and provide cement coverage from TD to a minimum of 200' above Niobrara and from 200' below Sussex to 200' above Sussex. Verify coverage with cement bond log. 3) Oil-based drilling fluid is to be used only after all fresh water aquifers are covered. |
| Drilling/Completion Operations | Per COGCC Order 1-232, Bradenhead tests shall be performed according to the following schedule and Form 17 submitted within 10 days of each test: 1) Within 60 days of rig release, prior to stimulation. If any pressure greater than 200 psi, must contact COGCC engineer prior to stimulation. 2) If a delayed completion, 6 months after rig release and prior to stimulation. If any pressure greater than 200 psi, must contact COGCC engineer prior to stimulation. 3) A post-production test within 60 days after first sales, as reported on the Form 10, Certificate of Clearance. |

Best Management Practices

| <u>No</u> | <u>BMP/COA Type</u> | <u>Description</u> |
|-----------|--------------------------------|--|
| 1 | Drilling/Completion Operations | Drill stem tests (Rule 604.c.(2)L) Conventional drill stem tests will not be conducted on DJ Basin horizontal wells currently being executed or planned by GWOC. If plans change in the future a well specific drill stem testing plan will be prepared for that particular well. Note that GWOC may elect to use one of several available wireline deployed tools for the purpose of measuring down hole formation pressures and/or collecting down hole fluid samples from the target formation(s) of a particular well. |
| 2 | Drilling/Completion Operations | Identification of P&A wells (Rule 604.c.(2)U) GWOC shall identify the location of the P&A wellbore with a permanent monument as specified in Rule 319.a.(5). The operator shall also inscribe or imbed the well number and date of plugging upon the permanent monument. P&A wellbores shall be cutoff well below ground surface in agricultural areas to provide for landowners to safely farm the reclaimed well area. |
| 3 | Drilling/Completion Operations | Wellbore Collision Prevention – Rule 317.r Prior to drilling operations, GWOG will perform an anti-collision scan of existing offset wells that have the potential of being within close proximity of the proposed well. This anti-collision scan will include definitive MWD or gyro surveys of the offset wells with included error of uncertainty per survey instrument, and compared against the proposed well path with its respective error of uncertainty. If current surveys do not exist for the offset wells, Operator may have gyro surveys conducted to verify bottom hole location. The proposed well will only be drilled if the anti-collision scan results indicate that there is not a risk for collision, or harm to people or the environment. |

| | | |
|---|--------------------------------|--|
| 4 | Drilling/Completion Operations | Stimulation Setback – Rule 317.s GWOC shall obtain signed written consent for any portion of the proposed wellbore's treated interval within 150' of an existing (producing, Shut-in, or temporarily abandoned) or permitted oil and gas well's treated interval belonging to another operator prior to completion of the well. |
| 5 | Drilling/Completion Operations | BOPE for well servicing (Rule 604.c.(2)J A BOPE with a minimum pressure rating of 3,000 psi will be utilized. At a minimum it will consist of 2 ram preventers and 1 annular preventer. The blind rams will be positioned below the pipe rams. A backup system of pressure control will be onsite consisting of at a minimum 1,000 psi accumulator (backup pressure). Accumulator is tested to 1,000 psi. Operator may use fixed sized pipe rams matching the tubular size. The annular preventer will be pressure tested to 250 psi low and 2,000 psi high for 10 minutes each. The ram preventers will be tested to 250 psi low and 2,500 psi high for 10 minutes each. All remaining well control equipment will be tested to 250 psi low and 2,500 psi high for 10 minutes each. The pressure tests will be conducted when the equipment is first installed and every 30 days thereafter. Pipe rams and blind rams will be function tested before every well service operation. Annual BOP inspections and pressure tests will be performed by the service company and will be charted & retained for 1 year. Backup stabbing valves shall be used on operations that require reverse circulation. Valves will be pressure tested before each well service operation in low pressure and high pressure range. The GWOC onsite representative will be certified in Well Control Operations by a Well-Cap certified training service. |
| 6 | Drilling/Completion Operations | Bradenhead Monitoring GWOC will comply with the "COGCC Policy for Bradenhead Monitoring during Hydraulic Fracturing Treatments in the Greater Wattenberg Area", dated May 29, 2012. |
| 7 | Drilling/Completion Operations | Alternative Logging Program: One of the first wells drilled on the pad will be logged with open-hole resistivity log and gamma-ray log from the kick-off point into the surface casing. All wells on the pad will have a cement bond log with gamma-ray run on production casing (or on intermediate casing if production liner is run) into the surface casing. The horizontal portion of every well will be logged with a measured-while-drilling gamma-ray log. The Form 5, Completion Report, for each well on the pad will list all logs run and have those logs attached. The Form 5 for a well without open-hole logs shall state "Alternative Logging Program - No open-hole logs were run" and shall clearly identify the type of log and the well (by API#) in which open-hole logs were run. |

Total: 7 comment(s)

Applicable Policies and Notices to Operators

Notice Concerning Operating Requirements for Wildlife Protection.

http://cogcc.state.co.us/documents/reg/Policies/Wildlife_Notice.pdf

Policy for Bradenhead Monitoring During Hydraulic Fracturing Treatments in the Greater Wattenberg Area.

<http://cogcc.state.co.us/documents/reg/Policies/PolicyGwaBradenheadMonitoringFinal.pdf>

Attachment Check List

| Att Doc Num | Name |
|--------------------|----------------------------|
| 401768596 | FORM 2 SUBMITTED |
| 401768905 | WELL LOCATION PLAT |
| 401768907 | DEVIATED DRILLING PLAN |
| 401768909 | DIRECTIONAL DATA |
| 401768910 | MINERAL LEASE MAP |
| 401770494 | SURFACE AGRMT/SURETY |
| 401773673 | OffsetWellEvaluations Data |
| 401773674 | EXCEPTION LOC REQUEST |

Total Attach: 9 Files

General Comments

| <u>User Group</u> | <u>Comment</u> | <u>Comment Date</u> |
|-------------------|---|---------------------|
| Permit | <ul style="list-style-type: none"> •COGCC Staff has updated the School and Childcare Center distances provided by the operator. Made the following changes with concurrence from the operator: •Checked mineral lease information boxes. | 03/30/2020 |
| Permit | Final Review Completed. | 03/27/2020 |
| Permit | COGCC conducted the technical review for the related Oil and Gas Location Assessment permit, Form 2A document #401765139 under the statutory authority provided through SB 19-181, including the Objective Criteria. The Director approved the Form 2A on 02/27/2020, amending Location ID #443415 subject to conditions included in the permit. The well proposed by this related Form 2 was contemplated during COGCC's review of the Form 2A. The Objective Criteria Review Memo (Doc# 1010851) can be found in the document file for this Location. | 03/26/2020 |
| Permit | <ul style="list-style-type: none"> •COGCC Staff has added the Local Government siting permit information and the School and Childcare Center distances provided by the operator. Made the following changes with concurrence from the operator: •Updated the open hole logging BMP. •Added the spacing order# to the Spacing & Formations Tab, and removed docket # from the comments. •Added the Location ID# to the submit tab. •Added designated setback location information buffer zone acknowledgement and date of notification to the building unit owners on the Cultural Setbacks tab. •Permitting review complete and ready to pass. | 02/27/2020 |
| Permit | Checked the box for rotating head on BOP equipment type as per other permits on location Passed Completeness | 09/26/2018 |

Total: 5 comment(s)