

FORM
2A

Rev
04/01

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:

400262066

Date Received:

03/22/2012

Oil and Gas Location Assessment

☒ New Location ☐ Amend Existing Location Location#: _____

Submit original plus one copy. This form is to be submitted to the COGCC prior to any ground disturbance activity associated with oil and gas development operations. This Assessment may be approved as a standalone application or submitted as an informational report accompanying an Application for Permit-To-Drill, Form 2. Approval of this Assessment will allow for the construction of the below specified location; however, it does not supersede any land use rules applied by the local land use authority. This form may serve as notice to land owners and other interested parties, please see the COGCC web site at <http://colorado.gov/cogcc/> for all accompanying information pertinent to this Oil and Gas Location Assessment.

Location ID:

430437

Expiration Date:

10/11/2015

☒ This location assessment is included as part of a permit application.

1. CONSULTATION

- ☐ This location is included in a Comprehensive Drilling Plan. CDP # _____
- ☒ This location is in a sensitive wildlife habitat area.
- ☐ This location is in a wildlife restricted surface occupancy area.
- ☐ This location includes a Rule 306.d.(1)A.ii. variance request.

2. Operator

Operator Number: 10255

Name: QUICKSILVER RESOURCES INC

Address: 801 CHERRY ST - #3700 UNIT 19

City: FT WORTH State: TX Zip: 76102

3. Contact Information

Name: Pamela Osburn

Phone: (817) 665-4918

Fax: (817) 665-5009

email: posburn@qvinc.com

4. Location Identification:

Name: PIRTLAW PARTNERS, LTD Number: 32-09

County: ROUTT

QuarterQuarter: SWNE Section: 9 Township: 6N Range: 87W Meridian: 6 Ground Elevation: 6616

Define a single point as a location reference for the facility location. This point should be used as the point of measurement in the drawings to be submitted with this application. When the location is to be used as a well site then the point shall be a well location.

Footage at surface: 1336 feet FNL, from North or South section line, and 2385 feet FEL, from East or West section line.

Latitude: 40.496215 Longitude: -107.152379 PDOP Reading: 1.8 Date of Measurement: 11/14/2011

Instrument Operator's Name: DOWLING LAND SURVEYORS

5. Facilities (Indicate the number of each type of oil and gas facility planned on location):

Special Purpose Pits: <input type="text"/>	Drilling Pits: <input type="text"/>	Wells: <input type="text" value="1"/>	Production Pits: <input type="text"/>	Dehydrator Units: <input type="text"/>
Condensate Tanks: <input type="text"/>	Water Tanks: <input type="text" value="1"/>	Separators: <input type="text" value="2"/>	Electric Motors: <input type="text"/>	Multi-Well Pits: <input type="text"/>
Gas or Diesel Motors: <input type="text" value="1"/>	Cavity Pumps: <input type="text"/>	LACT Unit: <input type="text"/>	Pump Jacks: <input type="text"/>	Pigging Station: <input type="text"/>
Electric Generators: <input type="text"/>	Gas Pipeline: <input type="text"/>	Oil Pipeline: <input type="text"/>	Water Pipeline: <input type="text"/>	Flare: <input type="text"/>
Gas Compressors: <input type="text"/>	VOC Combustor: <input type="text"/>	Oil Tanks: <input type="text" value="2"/>	Fuel Tanks: <input type="text"/>	

Other: 1 HEATER TREATER

6. Construction:

Date planned to commence construction: 04/16/2012 Size of disturbed area during construction in acres: 3.56
Estimated date that interim reclamation will begin: 04/15/2013 Size of location after interim reclamation in acres: 1.00
Estimated post-construction ground elevation: 6620 Will a closed loop system be used for drilling fluids: Yes ☒
Will salt sections be encountered during drilling: Yes ☐ No ☒ Is H2S anticipated? Yes ☐ No ☒
Will salt (>15,000 ppm TDS Cl) or oil based muds be used: Yes ☒ No ☐
Mud disposal: Offsite ☒ Onsite ☐ Method: Land Farming ☐ Land Spreading ☐ Disposal Facility ☒
Other: _____

7. Surface Owner:

Name: _____ Phone: _____
Address: _____ Fax: _____
Address: _____ Email: _____
City: _____ State: _____ Zip: _____ Date of Rule 306 surface owner consultation: 02/03/2011
Surface Owner: ☒ Fee ☐ State ☐ Federal ☐ Indian
Mineral Owner: ☒ Fee ☐ State ☐ Federal ☐ Indian
The surface owner is: ☐ the mineral owner ☐ committed to an oil and gas lease
☐ is the executer of the oil and gas lease ☐ the applicant
The right to construct the location is granted by: ☐ oil and gas lease ☒ Surface Use Agreement ☐ Right of Way
☐ applicant is owner
Surface damage assurance if no agreement is in place: ☐ \$2000 ☐ \$5000 ☐ Blanket Surety ID _____

8. Reclamation Financial Assurance:

☐ Well Surety ID: 20080107 ☐ Gas Facility Surety ID: _____ ☐ Waste Mgmt. Surety ID: _____

9. Cultural:

Is the location in a high density area (Rule 603.b.): Yes ☐ No ☒
Distance, in feet, to nearest building: 4670, public road: 1500, above ground utilit: 3100
, railroad: 3095, property line: 1336

10. Current Land Use (Check all that apply):

Crop Land: ☐ Irrigated ☐ Dry land ☐ Improved Pasture ☐ Hay Meadow ☐ CRP
Non-Crop Land: ☒ Rangeland ☐ Timber ☐ Recreational ☐ Other (describe): _____
Subdivided: ☐ Industrial ☐ Commercial ☐ Residential

11. Future Land Use (Check all that apply):

Crop Land: ☐ Irrigated ☐ Dry land ☐ Improved Pasture ☐ Hay Meadow ☐ CRP
Non-Crop Land: ☒ Rangeland ☐ Timber ☐ Recreational ☐ Other (describe): _____
Subdivided: ☐ Industrial ☐ Commercial ☐ Residential

12. Soils:

List all soil map units that occur within the proposed location. Attach the National Resource Conservation Service (NRCS) report showing the "Map Unit Description" report listing the soil typical vertical profile. This data is to used when segregating topsoil.

The required information can be obtained from the NRCS web site at <http://soildatamart.nrcs.usda.gov/> or from the COGCC web site GIS Online map page found at <http://colorado.gov/cogcc>. Instructions are provided within the COGCC web site help section.

NRCS Map Unit Name: 7E-0 MORAPOS LOAM, 12 TO 25 PERCENT SLOPES

NRCS Map Unit Name: _____
NRCS Map Unit Name: _____

13. Plant Community:

Complete this section only if any portion of the disturbed area of the location's current land use is on non-crop land.

Are noxious weeds present: Yes ☒ No ☐
Plant species from: ☐ NRCS or, ☒ field observation Date of observation: 11/03/2011
List individual species: RABBITBRUSH, INTERMEDIATE WHEATGRASS, SNOWBERRY

Check all plant communities that exist in the disturbed area.

- ☐ Disturbed Grassland (Cactus, Yucca, Cheatgrass, Rye)
☒ Native Grassland (Bluestem, Grama, Wheatgrass, Buffalograss, Fescue, Oatgrass, Brome)
☐ Shrub Land (Mahogany, Oak, Sage, Serviceberry, Chokecherry)
☐ Plains Riparian (Cottonwood, Willow, Aspen, Maple, Poplar, Russian Olive, Tamarisk)
☐ Mountain Riparian (Cottonwood, Willow, Blue Spruce)
☐ Forest Land (Spruce, Fir, Ponderosa Pine, Lodgepole Pine, Juniper, Pinyon, Aspen)
☐ Wetlands Aquatic (Bullrush, Sedge, Cattail, Arrowhead)
☐ Alpine (above timberline)
☐ Other (describe): _____

14. Water Resources:

Rule 901.e. may require a sensitive area determination be performed. If this determination is performed the data is to be submitted with the Form 2A.

Is this a sensitive area: ☒ No ☐ Yes Was a Rule 901.e. Sensitive Areas Determination performed: ☐ No ☒ Yes
Distance (in feet) to nearest surface water: 1000, water well: 3100, depth to ground water: 50
Is the location in a riparian area: ☒ No ☐ Yes Was an Army Corps of Engineers Section 404 permit filed ☒ No ☐ Yes
Is the location within a Rule 317B Surface Water Supply Area buffer zone:
☒ No ☐ 0-300 ft. zone ☐ 301-500 ft. zone ☐ 501-2640 ft. zone

If the location is within a Rule 317B Surface Water Supply Area buffer have all public water supply systems within 15 miles been notified: ☒ No ☐ Yes

15. Comments:

THE SUA CAN BE FOUND WITH THE FORM 2 APD, DOC ID# 400247021

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

Signed: _____ Date: 03/22/2012 Email: posburn@qvinc.com

Print Name: Pamela S. Osburn Title: Sr. Regulatory Analyst

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: Matthew Lee Director of COGCC Date: 10/12/2012

**CONDITIONS OF
APPROVAL, IF ANY:**

All representations, stipulations and conditions of approval stated in this Form 2A for this location shall constitute representations, stipulations and conditions of approval for any and all subsequent operations on the location unless this Form 2A is modified by Sundry Notice, Form 4 or an Amended Form 2A.

SITE SPECIFIC COAs:

The drilling pit, if constructed, must be lined, or a closed loop system (which operator has indicated on the Form 2A) must be implemented during drilling. All cuttings generated during drilling with oil based muds (OBM)/high chloride mud must be kept in the lined drilling pit, or placed either in containers or on a lined/bermed portion of the well pad; prior to analysis and/or offsite disposal.

The moisture content of any drill cuttings in a cuttings pit, trench, or pile shall be as low as practicable to prevent accumulation of liquids greater than de minimis amounts.

Operator must implement best management practices to contain any unintentional release of fluids, including any fluids conveyed via temporary surface or buried pipelines.

Operator must ensure secondary containment for any volume of fluids contained at well site during drilling and completion operations; including, but not limited to, construction of a berm or diversion dike, diversion/collection trenches within and/or outside of berms/dikes, site grading, or other comparable measures (i.e., best management practices (BMPs) associated with stormwater management) sufficiently protective of nearby surface water. Any berm constructed at the well pad location will be stabilized, inspected at regular intervals (at least every 14 days), and maintained in good condition.

If the well is to hydraulically stimulated, flowback and stimulation fluids must be sent to tanks, separators, or other containment/filtering equipment before the fluids can be placed into any pipeline or pit located on the well pad or into tanker trucks for offsite disposal. The flowback and stimulation fluid tanks, separators, or other containment/filtering equipment must be placed on the well pad in an area with additional downgradient perimeter berming. The area where flowback fluids will be stored/reused must be constructed to be sufficiently impervious to contain any spilled or released material.

The access road will be constructed to prevent sediment migration from the access road to nearby surface water or any drainages leading to other nearby surface waters.

Water Testing: Prior to drilling, operator shall sample two (2) to three (3) closest domestic water wells, other water wells, and/or springs; and two (2) to three (3) nearby surface water features (two nearby surface water ponds and the intermittent stream to the north [if water is present]). If possible, the water wells or springs selected should be on opposite sides of the oil and gas location not exceeding a one (1) mile radius. The sample location shall be surveyed in accordance with Rule 215.

Initial baseline testing shall include laboratory analysis of pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime and coliform), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Field observations such as odor, water color, sediment, bubbles, and effervescence shall also be included. COGCC recommends that the latest version of EPA SW 846 analytical methods be used where possible and that analyses of samples be performed by laboratories that maintain state or national accreditation programs.

If free gas or a dissolved methane concentration greater than 1.0 milligram per liter (mg/l) is detected in a water well, gas compositional analysis and stable isotope analysis of the methane (carbon and hydrogen – 12C, 13C, 1H and 2H) shall be performed to determine gas type. If test results indicated thermogenic or a mixture of thermogenic and biogenic gas. If the methane concentration increases by more than 5.0 mg/l between sampling periods, or increases to more than 10. mg/l, the operator shall notify the Director and the owner of the water well immediately.

After 90 days, but less than 180 days of completion of the first proposed well a "post-completion" test shall be performed for the same analytical parameters listed above and repeated one (1), three (3) and six (6) years thereafter. If the well is a non-producing well, then the one (1), three (3) and six (6) year samples will not be required. If no significant changes from the baseline have been identified after the third test (i.e. the six-year test), no further testing shall be required. Additional "post-completion" test(s) may be required if changes in water quality are identified during follow-up testing. The Director may require further water well sampling at any time in response to complaints from water well owners.

Copies of all test results described above shall be provided to the Commission and the water well owner within three (3) months of collecting the samples. The data shall be sent via email to the COGCC Environmental Data Analyst (Arthur Koepsell; email arthur.koepsell@state.co.us), with a copy provided to the COGCC OGLA Specialist for Western Colorado (Dave Kubeczko; email dave.kubeczko@state.co.us). Documented refusal to grant access by well owner shall not constitute a violation of this COA.

Attachment Check List

Att Doc Num	Name
1293011	CORRESPONDENCE
1293012	CORRESPONDENCE
1293013	CONST. LAYOUT DRAWINGS
2034418	PROPOSED BMPs
2538005	CORRESPONDENCE
400262066	FORM 2A SUBMITTED
400262070	PROPOSED BMPs
400262071	CONST. LAYOUT DRAWINGS
400262072	HYDROLOGY MAP
400262073	LEGAL/LEASE DESCRIPTION
400262074	LOCATION DRAWING
400262075	WELL LOCATION PLAT
400262076	NRCS MAP UNIT DESC
400262077	REFERENCE AREA MAP
400262078	SENSITIVE AREA DATA
400262079	LOCATION PICTURES
400262080	REFERENCE AREA PICTURES
400264186	ACCESS ROAD MAP

Total Attach: 18 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Permit	LGD comments addressed by attached correspondence. No public comments. Final Review--passed.	10/12/2012 12:52:59 PM
Agency	To address air quality issues related to individual sources, operators will need to comply with new Federal "New Source Performance Standards" to reduce air emissions. CDPHE encourages and supports best management practices for air emissions and fugitive dust controls.	7/10/2012 12:46:47 PM

DOW	<p>The operator has agreed to the following BMPs:</p> <ol style="list-style-type: none"> 1.Where oil and gas activities must occur near active bald eagle winter roost sites, conduct these activities outside the time period from November 15 through February 28. 2.Restrict post-development well site visitations to between the hours of 10:00 a.m. and 2:00 p.m. from November 15 to March 15 for active bald eagle winter roost sites. 3.Where oil and gas activities must occur within 1.25 miles of Columbian sharp-tailed grouse leks or within other mapped Columbian sharp-tailed grouse breeding or summer habitat, conduct these activities outside the period between March 15 and July 30. Pirtlaw Partners 32-09 is approximately 0.6 miles from the Wolf Mountain Ranch Lek. 4.For work-over activity attempt to avoid March 15 to July 30 time period. If it is necessary to work within that time period consult/notify local CPW contact and restrict daily visits to period from 9am to 4pm. 5.Restrict well site visitations to portions of the day between 9:00 a.m. and 4:00 p.m. during the Columbian sharp-tailed grouse lekking season, from March 15 to June 1. 6.When compressor stations must be sited within 1.25 miles of Columbian sharp-tailed grouse active and inactive (within last 10 years) lek sites, locate compressor stations no closer than 2,500 feet from the lek. 7.Install raptor perch deterrents on equipment, fences, cross arms and pole tops in Columbian sharp-tailed grouse habitat. 8.Reclaim/restore Columbian sharp-tailed grouse habitats with native grasses and forbs conducive to optimal Columbian sharp-tailed grouse habitat and other wildlife appropriate to the ecological site. Reclamation of breeding habitat should include a substantially higher percentage of forbs than other areas. 9.Muffle sound from compressors, pump jacks or other motors necessary to run operations at the site.If mufflers are used, point upward to dissipate sound and vibration. 10.Install and utilize bear-proof dumpsters and trash receptacles for all food-related trash on location following COGCC Rule 1204 a-1. <p>Jacob Davidson, 5/2/2012, 16:58</p>	5/2/2012 4:58:07 PM
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LGD	<p>This well is the third oil well proposed in this area. The Pirtlaw 24-33 API05-107-06248-00 and Pirtlaw 14-03 API 05-107-06241-00 are located north of the proposed Pirtlaw 32-09. All of the sites are located east of the Yampa River and will have cumulative impacts on the wildlife in the area, noise impacts, and potential air and water quality impacts. The surface is in a conservation easement intended to protect the visual, wildlife, agriculture and DPW Hunting for Wildlife programs.</p> <p>A Special Use Permit is required for Oil and Gas Operations in Routt County. The petitioner is aware of this process.</p> <p>There are wildlife concerns in this area. The well site is approximately 1,200' from Bald Eagle Winter Concentration area, within Columbian Sharp-tailed Grouse Production area, within Greater Sage Grouse Production area, within Elk Severe Winter Range, within Great Blue Heron foraging area, and abutting Mule Deer Severe Winter range. All conditions placed by the CPW must be complied with. The Columbian Sharpe-tailed Grouse should be closely monitored to determine if any wildlife are being impacted by oil/gas operations. Since this is the third well site in this area and all sites are located within a mile of each other, additional reduction/restriction in hours for site visits/maintenance and hauling to reduce noise and/or human disturbance should be considered for all sites.</p> <p>The site is located approximately 1,600' (1/3 mi.) east of the Yampa River and 600' from a stock pond and intermittent stream. Routt County is concerned with the possible contamination of water. Because of the location of the proposed well, annual surface water monitoring shall be performed at the stock pond and intermittent stream. Baseline samples shall be taken prior to operation.</p> <p>Annual ground water monitoring should be performed at a location down-gradient between the drilling well site and the Yampa River at either a water well, seep or spring. Baseline samples shall be taken prior to operations.</p> <p>Water testing protocol and reporting to Routt County should be in accordance with the COGA program requirements.</p> <p>Routt County requests information from the COGCC after drilling operations are complete for the location of aquifers and showing that casing was completed at minimum requirements to protect all aquifers.</p> <p>Continued best management practices should be used to test or monitor air quality. The COGCC should work with CDPHE to develop monitoring system requirements and schedules for all operators. New technology should be used to prohibit emissions from tanks, equipment and flares at the onset of production.</p>	4/23/2012 11:11:57 AM
OGLA	Initiated/Completed OGLA Form 2A review on 04-22-12 by Dave Kubeczko; requested acknowledgement of fluid containment, spill/release BMPs, lined pits/closed loop, cuttings containment, baseline water sampling, moisture content cuttings, access road sediment control, and flowback to tanks COAs from operator on 04-22-12 and 10-10-12; received acknowledgement of COAs from operator on 04-27-12 and 10-12-12; passed by CPW on 05-02-12 with operator agreed to BMPs acceptable; addressed LGD comments from 01-27-12 on 10-12-12 (email correspondence is attached); passed OGLA Form 2A review on 10-12-12 by Dave Kubeczko; fluid containment, spill/release BMPs, lined pits/closed loop, cuttings containment, baseline water sampling, moisture content cuttings, access road sediment control, and flowback to tanks COAs.	4/22/2012 2:35:51 PM
Permit	at oper.'s request, APD for horiz. lateral associated w/ this well (doc #400261961) was withdrawn.	4/11/2012 7:31:35 AM
Permit	per LGD's request, extended comment period for this 2A and its related APD's, doc #400247021, doc #400261961 for ten days past the expiration of the comment period (4/16) for doc #400261961	4/3/2012 2:26:13 PM
OGLA	Operator checked RSO, location maps as SWA.	3/26/2012 8:14:39 AM
Permit	Operator input comment about SUA and attached Access road map. This form has passed completeness.	3/23/2012 6:50:01 AM

Permit	Returned to draft. Missing SUA and Access road map.	3/22/2012 3:00:34 PM
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Total: 10 comment(s)

BMP

<u>Type</u>	<u>Comment</u>
Wildlife	<ol style="list-style-type: none"> 1. Where oil and gas activities must occur near active bald eagle winter roost sites, conduct these activities outside the time period from November 15 through February 28. 2. Restrict post-development well site visitations to between the hours of 10:00 a.m. and 2:00 p.m. from November 15 to March 15 for active bald eagle winter roost sites. 3. Where oil and gas activities must occur within 1.25 miles of Columbian sharp-tailed grouse leks or within other mapped Columbian sharp-tailed grouse breeding or summer habitat, conduct these activities outside the period between March 15 and July 30. Pirtlaw Partners 32-09 is approximately 0.6 miles from the Wolf Mountain Ranch Lek. 4. For work-over activity attempt to avoid March 15 to July 30 time period. If it is necessary to work within that time period consult/notify local CPW contact and restrict daily visits to period from 9am to 4pm. 5. Restrict well site visitations to portions of the day between 9:00 a.m. and 4:00 p.m. during the Columbian sharp-tailed grouse lekking season, from March 15 to June 1. 6. When compressor stations must be sited within 1.25 miles of Columbian sharp-tailed grouse active and inactive (within last 10 years) lek sites, locate compressor stations no closer than 2,500 feet from the lek. 7. Install raptor perch deterrents on equipment, fences, cross arms and pole tops in Columbian sharp-tailed grouse habitat. 8. Reclaim/restore Columbian sharp-tailed grouse habitats with native grasses and forbs conducive to optimal Columbian sharp-tailed grouse habitat and other wildlife appropriate to the ecological site. Reclamation of breeding habitat should include a substantially higher percentage of forbs than other areas. 9. Muffle sound from compressors, pump jacks or other motors necessary to run operations at the site. If mufflers are used, point upward to dissipate sound and vibration. 10. Install and utilize bear-proof dumpsters and trash receptacles for all food-related trash on location following COGCC Rule 1204 a-1.
Site Specific	Quicksilver Resources Inc. is an original participating operator in the COGA Baseline Groundwater Quality Sampling Program and will follow the COGA program on this well.

Total: 2 comment(s)