



State
of
Colorado

Kubeczko, Dave <dave.kubeczko@state.co.us>

Quicksilver Resources, Pirtlaw Partners Ltd 32-09 Pad, SWNE Sec 9 T6N R87W, Routt County, Form 2A#400262012 Review

Kubeczko, Dave <dave.kubeczko@state.co.us>
To: Dave Kubeczko <dave.kubeczko@state.co.us>

Fri, Oct 12, 2012 at 12:10 PM

Scan No 1293011 CORRESPONDENCE 2A#400262066

COGCC has added the following statement at the end of COA 9: Documented refusal to grant access by well owner shall not constitute a violation of this COA.

From: Cindy Keister [mailto:ckeister@qrinc.com]

Sent: Friday, October 12, 2012 10:40 AM

To: Kubeczko, Dave

Cc: Pamela Osburn

Subject: Quicksilver Resources, Pirtlaw Partners Ltd 32-09 Pad, SWNE Sec 9 T6N R87W, Routt County, Form 2A#400262012 Review

Dave,

Please see Todd's changes below to COA 9.

Please let Todd or me know if you have any questions.

Thanks for your help.

Cindy Keister
Director Regulatory Affairs
Quicksilver Resources
801 Cherry Street
Suite 3700, Unit 19
Fort Worth, Texas 76102

Direct Line: 817/665-5572
Cell: 682/429-3861

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From: Todd Hutson

Sent: Friday, October 12, 2012 10:38 AM

To: Stan Page; Cindy Keister

Subject: RE: Quicksilver Resources, Pirtlaw Partners Ltd 32-09 Pad, SWNE Sec 9 T6N R87W, Routt County, Form 2A#400262066 Review

I would propose to following:

COA 9 – Baseline Water Quality Testing: Prior to drilling, operator shall, if available, sample two (2) to three (3) closest domestic water wells, existing monitoring wells, and/or springs; and three (3) nearby surface water features (two nearby surface water ponds and the stream to the north [if running water is present]). If possible, the water wells or springs selected should be on opposite sides of the oil and gas location and all sample locations shall be within a one (1) mile radius of the oil & gas well. 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 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 the methane concentration is detected in excess of 5.0 mg/l, the operator shall notify the Director and the owner of the water well immediately.

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).

Thanks, Todd

Todd Hutson

Environmental Manager

Quicksilver Resources Inc.

801 Cherry Street

Suite 3700, Unit 19

Fort Worth, Texas 76102

thutson@qrinc.com

P: 817-665-5434

C: 817-422-2883

F: 817-665-4191

From: Kubeczko, Dave [<mailto:Dave.Kubeczko@state.co.us>]

Sent: Wednesday, October 10, 2012 2:06 PM

To: Cindy Keister

Subject: Quicksilver Resources, Pirtlaw Partners Ltd 32-09 Pad, SWNE Sec 9 T6N R87W, Routt County, Form 2A#400262012 Review

Cindy,

Based on the wildcat status of the Pirtlaw Partners Ltd 32-09 Pad COGCC has been reviewing the **Form 2A** (#400262066). COGCC understands that Quicksilver is conducting surface water and groundwater sampling per the Surface Use Agreement with the landowner. Based on additional site inspections by COGCC, we would like to attached the following additional condition of approval (COA) to the Form 2A to provide the COGCC with some baseline data for surface water and groundwater.

COA 9 - 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).

COGCC would appreciate your concurrence with attaching this additional COA to the Form 2A permit prior to passing the OGLA review. If you have any questions, please do not hesitate to call me at (970) 309-2514 (cell), or email. Thanks.

Dave

David A. Kubeczko, PG

Oil and Gas Location Assessment Specialist

Colorado Oil & Gas Conservation Commission

Northwest Area Office

707 Wapiti Court, Suite 204

Rifle, CO 81650

Phone: (970) 625-2497x5

FAX: (970) 625-5682

Cell: (970) 309-2514

dave.kubeczko@state.co.us



Please consider the environment before printing this e-mail

From: Cindy Keister [mailto:ckeister@qrinc.com]

Sent: Friday, April 27, 2012 12:02 PM

To: Kubeczko, Dave

Cc: Pamela Osburn

Subject: Quicksilver Resources, Pirtlaw Partners Ltd 32-09 Pad, SWNE Sec 9 T6N R87W, Routt County, Form 2A#400262012 Review

Dave,

Thank you for correcting the wildlife section to SWH under Number 1 on the Form 2A. I was unable to update the Form 2A Application so attached are the correct CONST. LAYOUT DRAWINGS in reference to Item #2 below.

Quicksilver agrees to the following COA's.

Please let me know if you need further information.

Cindy Keister
Director Regulatory Affairs
Quicksilver Resources
801 Cherry Street
Suite 3700, Unit 19
Fort Worth, Texas 76102

Direct Line: 817/665-5572
Cell: 682/429-3861

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From: Kubeczko, Dave [mailto:Dave.Kubeczko@state.co.us]

Sent: Sunday, April 22, 2012 4:06 PM

To: Pamela Osburn

Subject: Quicksilver Resources, Pirtlaw Partners Ltd 32-09 Pad, SWNE Sec 9 T6N R87W, Routt County, Form 2A#400262012 Review

Pam,

I have been reviewing the Pirtlaw Partners Ltd 32-093 Pad **Form 2A** (#400262012). The location is not within a mapped RSO, but is within SWH for elk and Columbian sharp-tailed grouse. COGCC has made this change. COGCC requests the following clarifications regarding the data Quicksilver has submitted on or attached to the Form 2A prior to passing the Oil and Gas Location Assessment (OGLA) review. In addition, COGCC would like to attach the following conditions of approval (COAs) to the Form 2A.

1. **Construction (Section 6):** The box answering the question will salt (>15,000 ppm TDS Cl) or oil based muds (OBM) be used? has been marked **Yes**; therefore the following condition of approval (COA) will apply:

COA 11 - 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.

COA 38 - 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.

2. **Rule 303.d.(3).H.:** If the oil and gas location disturbance is to occur on lands with a slope ten percent (10%) or greater, or one (1) foot of elevation gain or more in ten (10) foot distance, then the following shall be required: i. Construction layout drawing (construction and operation); and ii. Location cross-section plot (construction and operation). Please provided Construction Layout Drawings that show the dimensions and layout of this well pad with topographic contours and cut and fill information.

3. **General:** The following conditions of approval (COAs) will apply:

COA 5 - Operator must implement best management practices to contain any unintentional release of fluids, including any fluids conveyed via temporary surface or buried pipelines.

COA 23 - 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.

COA 25 - 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.

COA 44 - 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.

COGCC would appreciate your concurrence with attaching these COAs (items 1 and 3) to the Form 2A permit prior to passing the OGLA review. The other issue (item 2) also needs to be addressed prior to permit approval. If you have any questions, please do not hesitate to call me at (970) 309-2514 (cell), or

email. Thanks.

Dave

David A. Kubeczko, PG

Oil and Gas Location Assessment Specialist

Colorado Oil & Gas Conservation Commission

Northwest Area Office

707 Wapiti Court, Suite 204

Rifle, CO 81650

Phone: (970) 625-2497x5

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