

**Montana Board of Oil and Gas Conservation
Environmental Assessment**

Operator: Crusader Energy Group LLC
Well Name/Number: Canucks 1H-13
Location: NW NE Section 24 T21N R59E
County: Richland, MT; **Field (or Wildcat)** W/C

Air Quality

(possible concerns)

Long drilling time: 30-40 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple drilling rig for 14,973' MD/10,474'TVD single lateral horizontal Bakken Formation test, but well will be drilled vertical first to 11,000' to the Duperow Formation and then plugged back with cement to + 9150' and kicked off for a horizontal Bakken Formation lateral.

Possible H₂S gas production: Yes

In/near Class I air quality area: No

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:

- Air quality permit (AQB review)
- Gas plants/pipelines available for sour gas
- Special equipment/procedures requirements
- Other: _____

Comments: No special concerns, adequate surface casing 1900' to be set and cemented back to surface with proper BOP stack should mitigate any concerns. Triple rig to drill to a 14,973' MD/10,474'TVD single lateral horizontal well test.

Water Quality

(possible concerns)

Salt/oil based mud: Use freshwater and freshwater mud system on surface and oil based invert mud system from base of surface casing to intermediate casing depth.

Brine polymer will be used to drill horizontal lateral.

High water table: No

Surface drainage leads to live water: Yes, closest drainage is an unnamed ephemeral tributary drainage to the O'Brien Creek, about 0.1 of a mile north of this location.

Water well contamination: No, closest water well is about 1/4 mile to the northwest, depth of well is 1368'. All other wells are 1/2 of a mile or further away from this location.

Deepest water well is only 1368' in depth and is about 1/2 of a mile to the northwest of this location. Surface casing will be set to 1900' and cemented back to surface.

Porous/permeable soils: No, sandy clay soils.

Class I stream drainage: None

Mitigation:

- Lined reserve pit
- Adequate surface casing
- Berms/dykes, re-routed drainage
- Closed mud system
- Off-site disposal of solids/liquids (in approved facility)
- Other: _____

Comments: 1900' of surface casing cemented to surface adequate to protect freshwater zones. Also, fresh water mud systems to be used on surface hole.

Soils/Vegetation/Land Use

(possible concerns)

Stream crossings: Yes, crosses O'Brien Creek.

High erosion potential: No, moderate cut, up to 13.9' and moderate fill, up to 11.8', required.

Loss of soil productivity: No, location will be restored after drilling, if nonproductive. If productive unused portion of drillsite will be reclaimed.

Unusually large wellsite: Large, 430'X300' location size required.

Damage to improvements: Slight, surface use is grazing land.

Conflict with existing land use/values: Slight

Mitigation

Avoid improvements (topographic tolerance)

Exception location requested

Stockpile topsoil

Stream Crossing Permit (other agency review)

Reclaim unused part of wellsite if productive

Special construction methods to enhance reclamation

Other _____

Comments: Access will be over existing county road, #116. About 6070' of new access will be built off the existing county road #116 into this location an existing crossing exists for O'Brien Creek, county did not require permit per Vanessa with PermitCo 4/09/08. Reserve pit liquids to be disposed at a commercial Class II disposal. Solids will be allowed to dry, pit liner folded over the top of the solids, spoil dirt to fill pit, top soil spread over pit area, and seeded to land owners specification. No special concerns

Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Residences about 7/8 of a mile to the south of this wellsite.

Possibility of H2S: Yes

Size of rig/length of drilling time: Triple drilling rig 30 to 40 days drilling time

Mitigation:

Proper BOP equipment

Topographic sound barriers

H2S contingency and/or evacuation plan

Special equipment/procedures requirements

Other: _____

Comments: No concerns, closest residences about 7/8 of a mile away from wellsite. H2S safety company to setup alarms and train rig employees. Proper BOP stack and surface casing should be able to control any problems that occurs.

Wildlife/recreation

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): None identified.

Conflict with game range/refuge management: No
Threatened or endangered Species : None identified.

Mitigation:

- Avoidance (topographic tolerance/exception)
- Other agency review (DFWP, federal agencies, DSL)
- Screening/fencing of pits, drillsite
- Other: _____

Comments: Private surface lands. No concerns.

Historical/Cultural/Paleontological

(possible concerns)

Proximity to known sites None identified

Mitigation

- avoidance (topographic tolerance, location exception)
- other agency review (SHPO, DSL, federal agencies)
- Other: _____

Comments: On private surface lands. No concerns.

Social/Economic

(possible concerns)

- Substantial effect on tax base
- Create demand for new governmental services
- Population increase or relocation

Comments: No concerns

Remarks or Special Concerns for this site

Well is a 14,973' MD/10,474'TVD single lateral horizontal Bakken Formation Test.

Summary: Evaluation of Impacts and Cumulative effects

No long term impacts expected. Some short term impacts will occur.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): Steven Sasaki

(title:) Chief Field Inspector

Date: April 9, 2008

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website

(Name and Agency)

Richland County water wells

(subject discussed)

April 9, 2008

(date)

If location was inspected before permit approval:

Inspection date: _____

Inspector: _____

Others present during inspection: _____