

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

**Operator:** Brigham Oil & Gas, L.P.  
**Well Name/Number:** Snyder 1-12 #1H  
**Location:** Lot 12 NW 1 T28N R57E  
**County:** Roosevelt, MT; **Field (or Wildcat)** Wildcat

**Air Quality**

(possible concerns)

Long drilling time: No, 30-40 days drilling time.  
Unusually deep drilling (high horsepower rig): Triple derrick rig, 19,549' MD/10,073' TVD, a single lateral horizontal Bakken Formation well test.  
Possible H2S gas production: Slight chance of H2S gas production.  
In/near Class I air quality area: No Class I air quality area.  
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: Existing pipeline for H2S gas in the area or if no gathering system nearby H2S gas can be flared under Board Rule 36.22.1220.

**Water Quality**

(possible concerns)

Salt/oil based mud: Yes to intermediate casing string hole to be drilled with oil based invert drilling fluids. Horizontal lateral will be drilled with brine fluids. Surface casing will be drilled with freshwater, and freshwater mud system.  
High water table: No high water table anticipated in the area of review.  
Surface drainage leads to live water: No, closest drainage is an unnamed ephemeral tributary drainage to Shotgun Creek, about 3/8 of a mile to the northwest from this location.  
Water well contamination: None, closest water wells in the area are about 5/8 of a mile to the east and about 1.25 miles to the northwest, from this location. Depth of these wells range from 80' to 86'. This is significantly shallower than the surface casing setting depth of 1900'. Surface casing will be drilled with freshwater and freshwater drilling fluids. Steel surface casing will be run and cemented to surface from 1900'.  
Porous/permeable soils: No, sandy silty clay soils.  
Class I stream drainage: No, Class I stream drainages in the area of review.

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' surface casing we'll be set. This is well below any freshwater zones in the adjacent water wells. This also will cover the base of the Fox Hills aquifer. Adequate surface casing and operational BOP equipment will prevent any well problems.

**Soils/Vegetation/Land Use**

(possible concerns)

Steam crossings: None anticipated.

High erosion potential: No, location will require a moderate cut of up to 21.3' and moderate fill, up to 11.2', required.

Loss of soil productivity: None, location to be restored after drilling well, if nonproductive. If productive unused portion of the wellsite will be reclaimed.

Unusually large wellsite: No, large well site 484'X484'

Damage to improvements: Slight, surface use is cultivated 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 Requires DEQ General Permit for Storm Water Discharge Associated with Construction Activity, under ARM 17.30.1102(28)

Comments: Will use existing county roads, Lanark Road and unnamed section line lease road. About 167' of new access road will be built into this location off existing east-west lease road. Cuttings will be solidified with flyash and buried in the lined reserve pit. Oil base invert drilling fluids will be recycled. Completion fluids will be removed and hauled to commercial Class II Disposal. The pit after solidification will be covered with subsoil if well is productive. If well is not productive subsoil will be spread and topsoil will be spread on top of the subsoil. No concerns.

### Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Nearest residence is about 3/4 of a mile to the east from this location. Town of Bainville is about 6.4 miles to the southeast from this location.

Possibility of H2S: Slight chance of H2S (Mississippian Formations).

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: Adequate surface casing cemented to surface with operational BOP stack should mitigate any problems. Sufficient distance between location and buildings noise should not be a problem.

### Wildlife/recreation

(possible concerns)

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

Proximity to recreation sites: None identified

Creation of new access to wildlife habitat: No

Conflict with game range/refuge management: No

Threatened or endangered Species: Species identified as threatened or endangered are the Pallid Sturgeon, Interior Lease Tern, Whooping Crane and Piping Plover. Candidate species is the Sprague's Pipit. MTFWP Natural Heritage Tracker website lists one (1) species of concern. It is the Whooping Crane.

Mitigation:

Avoidance (topographic tolerance/exception)

Other agency review (DFWP, federal agencies, DSL)

Screening/fencing of pits, drillsite

Other: \_\_\_\_\_

Comments: Tribal minerals will be intersected by the horizontal lateral. BLM will do on site EA. Private cultivated surface lands. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over private surface lands.

### 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: Tribal minerals will be intersected by the horizontal lateral. BLM will do on site EA. Surface location is private cultivated land. There may be possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite. The Board of Oil & Gas has no jurisdiction over private surface lands.

### Social/Economic

(possible concerns)

Substantial effect on tax base

Create demand for new governmental services

Population increase or relocation

Comments: Wildcat Bakken Formation horizontal well. No concerns.

### Remarks or Special Concerns for this site

None, Brigham Oil & Gas will drill a 19,549' MD/10,073' TVD, a single lateral horizontal Bakken Formation well test. No concerns.

### Summary: Evaluation of Impacts and Cumulative effects

Short term impacts expected, no long term impacts anticipated.

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): /s/Steven Sasaki

(title:) Chief Field Inspector

Date: February 11, 2012

Other Persons Contacted:

Montana Bureau of Mines and Geology, Groundwater Information Center GWIC website

(Name and Agency)

Roosevelt County water wells

(subject discussed)

February 11, 2012

(date)

US Fish and Wildlife, Region 6 website

(Name and Agency)

ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA COUNTIES, Roosevelt County

(subject discussed)

February 11, 2012

(date)

Montana Natural Heritage Program Website (FWP)

(Name and Agency)

Heritage State Rank= S1, S2, S3, T28N R57E

(subject discussed)

February 11, 2012

(date)

If location was inspected before permit approval:

Inspection date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Others present during inspection: \_\_\_\_\_