

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

**Operator:** Whiting Oil and Gas Corporation  
**Well Name/Number:** Gronlie Farms 31-25-TFH  
**Location:** NW NE Section 25 T31N R55E  
**County:** Sheridan, **MT;** **Field (or Wildcat)** W/C (Three Forks Horizontal)

**Air Quality**

(possible concerns)

Long drilling time: No, 30 to 40 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple derrick drilling rig to drill a pilot hole to 9425' to core the Bakken and Three Forks Formation. The openhole will be plugged back to 8669' kickoff point and a single lateral Three Forks Formation well test will be drilled to 18,901'MD/9,190'TVD.

Possible H<sub>2</sub>S gas production: H<sub>2</sub>S gas production possibility is slight (Mississippian Formations).

In/near Class I air quality area: Yes, closest Class I air quality area is the Fort Peck Indian Reservation. Reservation boundary is about 5.5 miles to the west from this location.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under rule 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 – using triple derrick drilling rig to drill a pilot hole to 9425' to core the Bakken and Three Forks Formation. The openhole will be plugged back to 8669' kickoff point and a single lateral Three Forks Formation well test will be drilled to 18,901'MD/9,190'TVD. If existing pipeline for H<sub>2</sub>S gas in the area, gas can be gathered or if no gathering system nearby, H<sub>2</sub>S gas can be flared under Board Rule 36.22.1220.

**Water Quality**

(possible concerns)

Salt/oil based mud: Yes, oil based invert drilling fluids will be used on the mainhole and pilot hole. The horizontal lateral will be drilled with brine water. The surface hole will be drilled with freshwater and freshwater drilling fluids.

High water table: Possible, high water table at this location.

Surface drainage leads to live water: Yes live water nearby in Homestead Lake in the Medicine Lake National Wildlife Refuge, about 3 miles to the southwest, closest drainage is an unnamed ephemeral drainage to Homestead Lake, about 1/16 of a mile to the south from this location.

Water well contamination: None, closest water wells are about 1/4 of a mile to the northwest, about 3/8 of a mile to the east, about 5/8 of a mile to the northeast and about 7/8 of a mile to the west from this location. All other water wells are 1 mile and further from this location in any direction. Depth of these domestic and stock water wells range from 80' to 295'. Surface casing hole will be drilled with freshwater and freshwater drilling fluids. Surface casing will be run and cemented to surface from 2000'.

Porous/permeable soils: No, sandy clay soils.  
Class I stream drainage: No class I stream drainages in this area.

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: 2000' of surface casing cemented to surface adequate to protect freshwater zones and to cover the base of the Fox Hills Formation.

### Soils/Vegetation/Land Use

(possible concerns)

Stream crossings: No, stream crossings anticipated, utilizing county road for the majority of the access.

High erosion potential: No, small cut, up to 3.7' and small fill, up to 2.1', required.

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

Unusually large wellsite: Yes, a large wellsite 440'X400'.

Damage to improvements: No surface use is a 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 \_\_\_\_\_

Comments: Access to location will be over existing State Highway #16 and existing county road, Homestead Highway. A short access of 158' will be built off the county road into this location. Oil based invert drilling fluids will be recycled. Completion fluids will be hauled to a Class II Disposal. Drilling cuttings and mud solids will be fly ashed in the lined pit and buried with subsoil cover. No special concerns.

### Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Nearest residences are about ¼ of a mile to the northwest, about ¾ of a mile to the southwest and about 7/8 of a mile to the northeast from the location. The town of Homestead, Montana is about 1 3/8 miles to the west, the town of Froid, Montana is about 5.6 mile to the southeast and the town of Medicine Lake, Montana is about 5.5 miles to the north from this location.

Possibility of H2S: H2S potential is slight (Mississippian Formations).

Size of rig/length of drilling time: Triple drilling rig/short 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 and operational BOP should mitigate any problems. No concerns.

### Wildlife/recreation

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): Medicine Lake National Wildlife Refuge is about 2 miles to the west, about 3 miles to the southwest and about 3.8 miles to the northeast from this location.

Proximity to recreation sites: \_\_\_\_\_

Creation of new access to wildlife habitat: No, surface use is cultivated land.

Conflict with game range/refuge management: No

Threatened or endangered Species: Species identified as threatened or endangered are the Whooping Crane and Piping Plover. Candidate species are the Sprague's Pipit. MTFWP Natural Heritage Tracker website lists Seven (7) species of concern: the Nelson's Sparrow, Grasshopper Sparrow, Chestnut-collared Longspur, Sedge Wren, Yellow Rail, Whooping Crane and Black Crowned Night Heron. Four (4) potential species of concern: the Hayden's Shrew, Chimney Swift, Eastern- Screech Owl and the Tennessee Warbler.

Mitigation:

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

Comments: The surface ownership is private cultivated land. 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: On private cultivated surface lands. 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:           No concerns.

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**Remarks or Special Concerns for this site**

To drill a pilot hole to 9425' and to core the Bakken and Three Forks Formation. The openhole will be plugged back to 8669' kickoff point and a single lateral Three Forks Formation well test will be drilled to 18,901'MD/9,190'TVD. No concerns.

**Summary: Evaluation of Impacts and Cumulative effects**

No significant long term impacts expected, some short term impacts will occur.

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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: April 7, 2012

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website  
(Name and Agency)  
Water wells in Sheridan County  
(subject discussed)  
April 7, 2012  
(date)

US Fish and Wildlife, Region 6 website  
(Name and Agency)  
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES  
MONTANA COUNTIES, Sheridan County  
(subject discussed)  
April 7, 2012  
(date)

Montana Natural Heritage Program Website (FWP)  
(Name and Agency)  
Heritage State Rank= S1, S2, S3, T31N R55E  
(subject discussed)

April 7, 2012  
(date)

If location was inspected before permit approval:

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

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

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