Montana Board of Oil and Gas Conservation
Environmental Assessment

Operator: Brigham Oil & Gas, L.P.
Well Name/Number: Judith 10-3 1H
Location: NW NE 15 T25N R59 E
County: Richland**, MT; Field (or Wildcat)** Wildcat

Air Quality

(possible concerns)
Long drilling time: No, 30-35 days drilling time.
Unusually deep drilling (high horsepower rig): Triple derrick rig 1000 HP, 20,819'MD/10,362'TVD Bakken Formation single lateral horizontal well test.
Possible H2S gas production: Slight chance of H2S gas production, Mississippian Formations.
In/near Class I air quality area: No Class I air quality area, in the area of review.
Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:
X Air quality permit (AQB review)
___ Gas plants/pipelines available for sour gas
__ Special equipment/procedures requirements
__ Other:

Comments: If there are no existing gas gathering system in this area, associated sweet gas and 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, oil based invert drilling fluids. Horizontal lateral will be drilled with brine fluids. Surface casing hole will be drilled with freshwater and freshwater drilling fluid system.
High water table: No high water table anticipated, in the area of review.
Surface drainage leads to live water: Yes, closest drainages are unnamed ephemeral tributary drainages to the North Fork Fourmile Creek, about 1/4 of a mile to the southeast and about 3/8 of a mile to the southwest. Also, an unnamed ephemeral tributary drainage to the Missouri River, lies about 3/8 of a mile to the northeast from this location and within this ephemeral drainage there is a stock pond.
Water well contamination: None, closest water wells in the area are about adjacent to the location to the north, about ½ of a mile to the west and about 5/8 of a mile to the southeast from this location. Depth of these wells range from 40' to 160'. These water wells are shallower than the surface casing setting depth of 1700'.
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
X Adequate surface casing
__ Berms/dykes, re-routed drainage
X Closed mud system
__ Off-site disposal of solids/liquids (in approved facility)
X Other: Lined cuttings pit will be solidified with flyash when drilling is complete.

Comments: 1700' surface casing well below freshwater zones in adjacent water wells. Also, covering Fox Hills aquifer. Adequate amount of surface casing will be set and BOP (5,000psig annular, pipe and blind rams) equipment (Rule 36.22.1014) to prevent problems.

Soils/Vegetation/Land Use

(possible concerns)
Steam crossings: None anticipated.
High erosion potential: No, location will require a moderate cut of up to 11.4' and small fill, up to 2.4', required.
Loss of soil productivity: None, location to be restored after drilling well, if nonproductive. If productive unused portion of wellsite will be reclaimed.
Unusually large wellsite: Yes, unusually large well site designed as a quad well pad, 550'X550' for Judith 10-3 #2H, Judith 10-3 #1H, Warren 15-22 #1H and Warren 15-22 #2H.
Damage to improvements: Slight, surface use is cultivated land.
Conflict with existing land use/values: Slight

Mitigation
__ Avoid improvements (topographic tolerance)
__ Exception location requested
_X_ Stockpile topsoil
__ Stream Crossing Permit (other agency review)
_X_ Reclaim unused part of wellsite if productive
__ Special construction methods to enhance reclamation
_X_ 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, #140. About 300' of new access road will be built into this location off existing east-west county road.. Cuttings will be solidified with flyash and buried in the lined cuttings 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 folded in and covered a minimum of 4' of subsoil. 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: Closest residences are about 1/4 of a mile to the west northwest, about ¾ of a mile to the southwest and about 7/8 of a mile to the southwest from this location. Town of Fairview is about 5.25 miles to the southeast from this location.
Possibility of H2S: Slight chance H2S, Mississippian Formations.
Size of rig/length of drilling time: Triple drilling rig 30 to 35 days drilling time.

Mitigation:
_X_ 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 working 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 are the Greater Sage

Grouse and the Sprague's Pipit. MTFWP Natural Heritage Tracker website indicates one (1) species of concern. That species is the Whooping Crane. MTFWP Natural Heritage Tracker website indicates four (4) Potential Species of Concern: Hayden's Shrew, Chimney Swift, Eastern Screech-Owl and Tennessee Warbler.

Mitigation:
__ Avoidance (topographic tolerance/exception)
_ Other agency review (DFWP, federal agencies, DSL)
__ Screening/fencing of pits, drillsite
__ Other:_____
Comments: Private surface cultivated land. There maybe 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 surface cultivated land. There maybe 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

This well is a 20,819'MD/10,362'TVD Bakken Formation single lateral horizontal well test. Location was constructed to accommodate four wells on the same well location. 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: May 5, 2012

Other Persons Contacted:

Montana Bureau of Mines and Geology, Groundwater Information Center GWIC website_____
(Name and Agency)
Richland County water wells
_____
(subject discussed)
May 1, 2012_____
(date)

US Fish and Wildlife, Region 6 website
(Name and Agency)
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA COUNTIES, Richland County
(subject discussed)

May 5, 2012_____
(date)

Montana Natural Heritage Program Website (FWP)
(Name and Agency)
Heritage State Rank= S1, S2, S3, T25N R59E
(subject discussed)

May 5, 2012_____
(date)

If location was inspected before permit approval:
Inspection date: _____
Inspector: _____
Others present during inspection:_____