

CHECKLIST ENVIRONMENTAL ASSESMENT

Proposed Action: Approve Drilling Permit (Form 22)

Project/Well Name: Doris 10-3 #1H

Operator: Kraken Operating LLC

Location: Lot 8 Section 11 T27N-57E

County: Roosevelt **MT; Field (or Wildcat):** Wildcat

Proposed Project Date: 11/21/2017

I. DESCRIPTION OF ACTION

Kraken Operating LLC plans to drill a single lateral Bakken formation test, 20,568' MD, 10,086' TVD. Surface casing will be set at 1900' and cemented to surface.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED

Montana Bureau of Mines and Geology, GWIC website (Roosevelt County Wells).

US Fish and Wildlife, Region 6 website

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

Montana Natural Heritage Program Website (FWP)

Heritage State Rank= S1, S2, S3, T27N R57E

Montana Cadastral Website

Surface Ownership and surface use Section 11 T27N R57E

Montana Department of Natural Resources MEPA Submittal

2. ALTERNATIVES CONSIDERED

No Action Alternative: The proposed well would not be drilled.

Action Alternative: Kraken Operating LLC would have permission to drill the well.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

3. AIR QUALITY

Long drilling time: No, 15 to 20 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple derrick rig to drill a single lateral horizontal Bakken Formation test.

Possible H₂S gas production: Slight chance H₂S gas from Mississippian Formations.

In/near Class I air quality area: Nearest Class I air quality area is the Fort Peck Indian Reservation, about 14.5 miles to the northwest from this location.

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

Comments: No special concerns – using triple derrick rig to drill a single lateral horizontal Bakken Formation test to 20,568' MD, 10,086' TVD. If there aren't any gas gathering systems nearby, associated gas can be flared under Board Rule 36.22.1220.

4. WATER QUALITY

Salt/oil based mud: Yes, intermediate casing string hole to be drilled with oil based invert drilling fluids (oil/water ratio of 75/25 to 80/20). Horizontal lateral will be drilled with brine water. Surface casing hole will use freshwater and freshwater mud system (Rule 36.22.1001).

High water table: No high water table anticipated at this location.

Surface drainage leads to live water: No, nearest drainage is an unnamed ephemeral drainage located 1/10 of a mile to the southwest from this location.

Water well contamination: None, closest water well is listed as unused and is located 4/5 of a mile to the southeast a stock water well is located 4/5 of a mile to the south. Th depth of the unused well is 80' and the stockwater well is 380'. Surface hole will be drilled with freshwater and freshwater mud system, Rule 36.22.1001. Surface casing will be set at 1900' and cemented to surface.

Porous/permeable soils: No, silty sandy clay soils.

Class I stream drainage: The Missouri River is located 2.5 miles to the south.

Groundwater vulnerability area: No.

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: cuttings pit to be used with 16 mil synthetic pit liner.

Comments: Steel surface casing will be run and cemented to surface to protect ground water. (Rule 36.22.1001).

5. SOILS/VEGETATION/LAND USE

Vegetation: Grassland.

Stream crossings: No stream crossings anticipated.

High erosion potential: High erosion potential on the cut and fill slope at this location. The location will require a large cut, up to 28.0' and medium fill, up to 16.2', required.

Loss of soil productivity: No, location will be restored after drilling if unproductive.

Unusually large wellsite (Describe dimensions): No a large wellsite, 420' X 365' location size required for three wells, Doris 10-3 #1H, Fred 152-2 #1H, and the Della 14-23 #1H.

Damage to improvements: Slight.

Conflict with existing land use/values: Slight, surface use is grazing land.

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

Access Road: Access will be over existing county road, 1012. A new access road of 6,991' will be built into location.

Drilling fluids/solids: Cuttings will be buried in the lined cuttings pit. Oil based drilling fluids will be recycled. Reserve pit fluids will be hauled to a commercial disposal. Pit will be allowed to dry and then closed with the pit liner remaining intact. No special concerns.

6. HEALTH HAZARDS/NOISE

Proximity to public facilities/residences: No residences within a 1 mile radius of location. The town of Bainville, Montana is about 8.9 miles to the northeast from this location.

Possibility of H2S: Slight chance of H2S from Mississippian Formations.

Size of rig/length of drilling time:

Mitigation: Triple drilling rig, 15 to 20 days drilling time.

- Proper BOP equipment
- Topographic sound barriers
- H2S contingency and/or evacuation plan
- Special equipment/procedures requirements
- Other:

7. WILDLIFE/RECREATION

Sage Grouse: No.

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

Proximity to recreation sites: None.

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 Least Tern, Whooping Crane, Red Knot, Northern Long-eared Bat, and Piping Plover. NH tracker website indicate fourteen (14) species of concern: Sprague's Pipit, Piping Plover, Whooping Crane, red-headed Woodpecker, Least Tern, Northern Redbelly Dace, Blue Sucker, Iowa Darter, Shortnose Gar, Sturgeon Chub, Sicklefin Chub, Paddlefish, Sauger, and Pallid Sturgeon.

Mitigation:

Avoidance (topographic tolerance/exception)

Other agency review (DFWP, federal agencies, DNRC Trust Lands)

Screening/fencing of pits, drillsite

Other:

Comments: 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. No concerns.

IV. IMPACTS ON THE HUMAN POPULATION

8. HISTORICAL/CULTURAL/PALEONTOLOGICAL

Proximity to known sites:

Mitigation

avoidance (topographic tolerance, location exception)

other agency review (SHPO, DNRC Trust Lands, federal agencies)

Other:

9. SOCIAL/ECONOMIC

Substantial effect on tax base

Create demand for new governmental services

Population increase or relocation

Comments: No concerns.

IV. SUMMARY

No long term impacts expected. Some short term impacts will occur, but can be mitigated. 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.

**EA Checklist
Prepared By:**

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Title: Compliance Specialist

Date: 07/24/17