

CHECKLIST ENVIRONMENTAL ASSESMENT

Proposed Action: Approve Drilling Permit (Form 22)

Project/Well Name: Higgins 13-24 #4H

Operator: Kraken Operating, LLC

Location: Section 13 27N 57E NWNE

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

Proposed Project Date: 5/4/2019

I. DESCRIPTION OF ACTION

Triple derrick rig 20,756' MD/10,257' TVD Bakken Formation horizontal well test. Surface casing to be set at 2,150'.

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 13 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, normal drilling time 25 to 35 days.

Unusually deep drilling (high horsepower rig): No.

Possible H₂S gas production: Yes, slight H₂S possible from Mississippian Formations.

In/near Class I air quality area: No Class I air quality area in area of review.

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 20,756' MD/10,257' TVD Bakken Formation horizontal well test. If there are no 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 will be drilled with oil based invert drilling fluids. Horizontal lateral will be drilled with salt based drilling fluids. Surface casing will be drilled with freshwater and freshwater mud system.

High water table: No.

Surface drainage leads to live water: No, The Missouri River is located about 3.2 miles to the south. An unnamed ephemeral drainage is located about ½ a mile to the southeast, which leads to a small reservoir 1.5 miles to the southeast.

Water well contamination: GWIC lists a stockwater well 3/5 of a mile to the northwest, this well is 60' deep. Another unused well is located 4/5 of a mile to the southwest and no depth is listed.

Porous/permeable soils: No, Sandy clay.

Class I stream drainage: The Missouri River is located about 3.2 miles to the south.

Groundwater vulnerability area: No.

Mitigation:

Lined cuttings pit:

Adequate surface casing

Berms/dykes, re-routed drainage

Closed mud system

Off-site disposal of solids/liquids (in approved facility)

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.

Steam crossings: None anticipated.

High erosion potential: No, location requires a medium cut of 12.7' and small fill of 4.4'.

Loss of soil productivity: No, if it is a dry hole the location will be reclaimed, if well is a producer the location will be downsized to accommodate only production equipment, rest of location will be reclaimed.

Unusually large wellsite (Describe dimensions): Large wellsite to accommodate five wells, 476' X 500'.

Damage to improvements: Slight, surface use is grassland.

Conflict with existing land use/values:

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 off CR 1012 and a new road of about 380' will be built into location.

Drilling fluids/solids: No pit listed on permit.

6. HEALTH HAZARDS/NOISE

Proximity to public facilities/residences: Bainville, MT is located about 8.3 miles to the northeast.

Possibility of H₂S: Yes, slight H₂S possible from Mississippian Formations.

Size of rig/length of drilling time: Triple derrick rig, 25-35 days drilling time.

Mitigation:

- 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: None.

Conflict with game range/refuge management: None.

Threatened or endangered Species: Species listed as threatened or endangered in Roosevelt County are:

Pallid Sturgeon, Piping Plover, Interior Least Tern, Whooping Crane, Red Knot, and Northern Long-

eared Bat. The Montana Natural Heritage Program site lists nineteen (19) species of concern: Eastern Red Bat, Hoary Bat, Little Brown Myotis, Sprague's Pipit, Golden Eagle, Piping Plover, Whooping Crane, Red-headed Woodpecker, Least Tern, Greater Short-horned Lizard, 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 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.

IV. IMPACTS ON THE HUMAN POPULATION

8. HISTORICAL/CULTURAL/PALEONTOLOGICAL

Proximity to known sites: None.

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:	Name: John Gizicki Title: Compliance Specialist	Date: 04/01/19
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