



Bureau of Land Management

Anchorage Field Office
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**Environmental Assessment for the
Drilling of a Natural Gas Well**

Marathon Oil Company
A-028142
AK-040-06-EA-051



Location:

Seward Meridian, T4N, R11W, Section 18

Prepared By:

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I. INTRODUCTION

Marathon Oil Company has submitted an application to the Bureau of Land Management for a permit to drill a natural gas well on a pre-existing pad in a previously developed gas field, commonly known as the Kenai Gas Field. Cook Inlet Regional Corporation (CIRI) is the surface owner of the lands involved. BLM retains jurisdiction over the project through Oil and Gas lease A-028142. CIRI has been notified of the activities occurring on the surface estate. The Kenai Unit is estimated to contain several billion cubic feet of proven reserves.

A. Purpose and Need for the Proposed Action:

The BLM has received an Application for Permit to Drill (APD) a natural gas well within the Kenai Unit. The Kenai Unit is a cooperative federal agreement that guides oil and gas development. The proposed well is necessary to further develop federal minerals within the Unit Agreement (UA) area to ensure maximum and efficient recovery of known gas reserves. The Proposed Action is in accordance with the terms of the UA, lease conditions and federal laws and regulations.

B. Conformance With Land Use Plan:

The BLM has not developed a land use plan for surface or subsurface oil and gas development in the Kenai area. However, this environmental analysis assesses the impacts of the Proposed Action and provides a basis for a decision on the proposal in accordance with federal regulations (43 CFR 1610.8(b)(1)).

In addition to the above, the proposed action is in conformance with the principles of the Southcentral Management Framework Plan (MFP), 1980:

Objective: Provide opportunities for the development of identified economic reserves of locatable and leasable minerals.

[Paragraph M-1.]

II. PROPOSED ACTION AND ALTERNATIVE

A. Proposed Action:

Marathon Oil Company is proposing to drill a natural gas well (KBU 24-7X) within the Kenai Gas Field. Its surface location will be 442' FNL, 599' FEL in Section 18, T4N, R11W of the Seward Meridian. This well will be drilled on an existing drilling pad (Pad 41-18) and will require no new road construction to access the drill site; existing roads will be used for site access. Existing production facilities will be utilized for post-production processing. A flow line will be installed from the KBU 24-7X wellhead to an existing line heater and a new separator. A water supply well exists on the 41-18 drilling pad, and the water can be easily accessed for mixing drilling muds and other on-site uses. In general, no new

construction is planned on the pad.

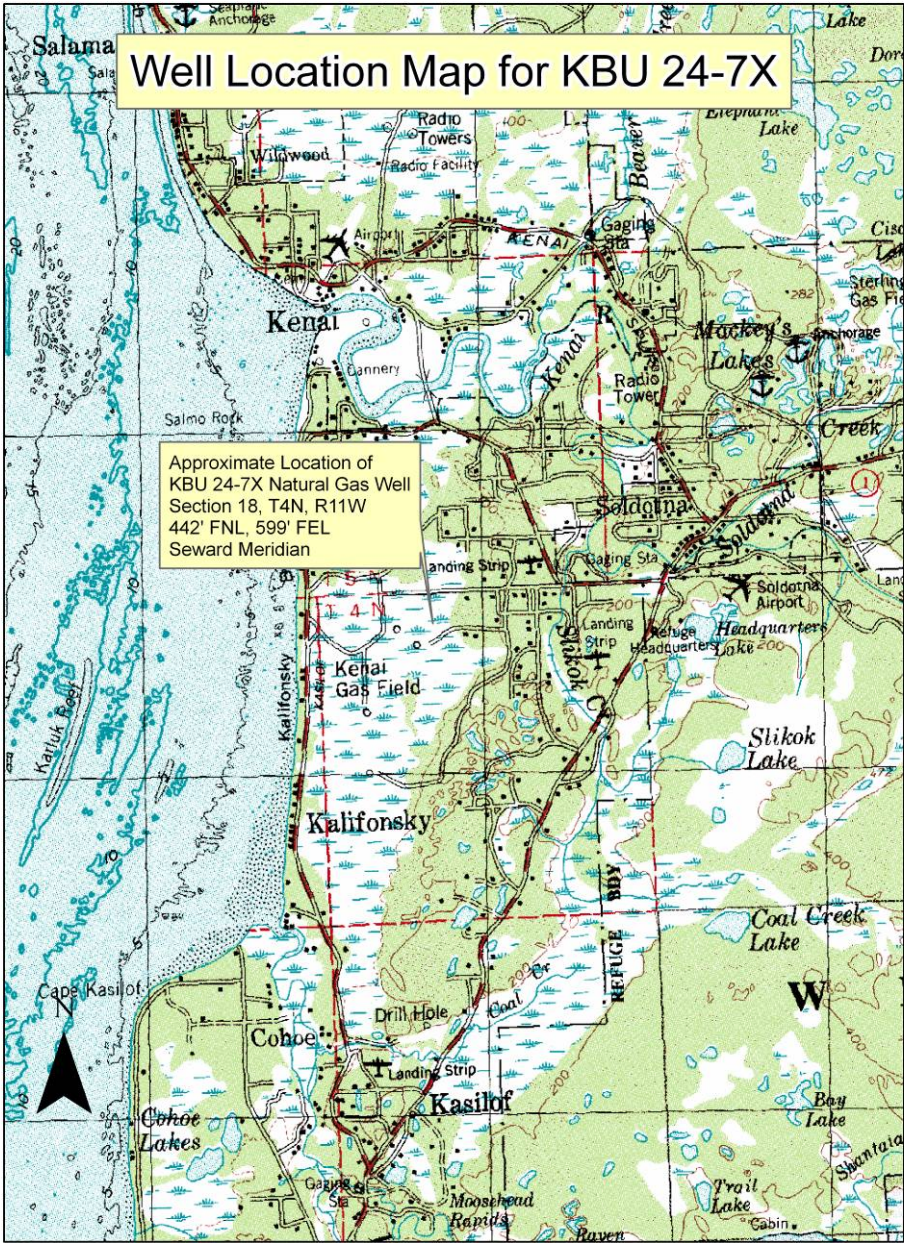
Drill cuttings will be dewatered on location. The cuttings and excess mud will be disposed of into Well KU 11-17, a Class II disposal well (AOGCC Disposal Injection Order No. 9, Permit #81-176) on Pad 41-18. All household and approved industrial garbage will be hauled to the Kenai Peninsula Borough Soldotna Landfill. Clear fluids will be hauled to Pad 34-31 of the Kenai Gas Field and injected in Well WD #1, an approved disposal well (AOGCC Permit #7-194). Unused chemicals will be returned to the vendors that provided them. Efforts will be made to minimize the use of all chemicals. Sewage will be hauled to the Kenai sanitation facility.

A minimal camp will be established on the pad to house various supervisory and service company personnel. Approximately four trailer house type structures will be required for this purpose. Bottled water will be used for human consumption. Potable water will be obtained from the existing water well on the pad. S & R, a local waste handler, will collect and transport sanitary wastes to their ADEC approved disposal facility. No additional structures will be necessary.

KBU 24-7X will be drilled from an existing pad (Pad 41-18). Reclamation of that pad will occur after the abandonment of Well KBU 24-7X and the other existing wells on Pad 41-18. Approval of the Plan of Reclamation will be obtained from the surface owner, CIRI Native Corporation, prior to beginning any reclamation work on-site.

- B. Alternative #1 - No Action Alternative:
Marathon Oil Company would not drill its KBU 24-7X Well in the Kenai Unit. No further disturbance, construction or activity would take place on the proposed 41-18 pad.

- C. Alternative #2:
Marathon Oil Company could develop a new pad in Section 18, T4N, R11W, Seward Meridian to access the target reservoir. However, such an alternative is economically and environmentally unsound. Therefore, no further analysis will be provided.



III. AFFECTED ENVIRONMENT

A. Critical Elements

The following critical elements of the human environment are either not present or would not be affected by the Proposed Action or No Action Alternative:

- Areas of Critical Environmental Concern
- Cultural Resources
- Environmental Justice
- Farmlands (Prime or Unique)
- Floodplains
- Invasive, Non-native Species
- Native American Religious Concerns
- Subsistence
- Threatened or Endangered Species
- Wastes, Hazardous/Solid
- Wild and Scenic Rivers
- Wilderness

1. Air Quality:

No air quality data is available for the KBU 24-7X site. However, air quality for the Cook Inlet and Kenai Peninsula area is generally considered good. Most of the land in the Kenai Peninsula Borough is classified by the Alaska Department of Environmental Conservation (ADEC) as Class II air sheds. Class II air sheds are generally pollution free and allow some industrial development.

A potential for surrounding wells to emit particulates, methane gas, carbon dioxide, carbon monoxide and nitrous oxides into the atmosphere still exists.

2. Water Quality (Surface/Ground):

Drainage of the lowlands for this area is generally to the east. Surface water of the wetlands has low turbidity and is often brownish in color. This brownish or “tea colored” water is attributed to leaching of organic compounds and high iron content. This staining is natural and not associated with oil and gas activities. Generally, surface and ground water quality are considered good.

3. Wetlands/Riparian Zones:

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory maps of the area identify two types of wetlands along the existing road system. These are generally described as persistent saturated scrub bog and persistent semi permanent

flooded scrub bog. An aerial survey of wetlands in June 1999 by Forcenergy and two environmental consultant staff revealed two additional wetland areas consisting of dwarf birch, alder and spruce. These are described as intermittent wetlands, with general drainage from east to west.

The proposed KBU 24-7X will be drilled in an area of open to closed white and/or black spruce forest with scattered stands of birch and cottonwood. These forests are interspersed with wetland openings consisting of lowland sedge-moss bog meadows. Depending on forest canopy, the under story of the forested areas around the proposed well consists of varying amounts of willow and alder, dwarf birch, blueberry, cranberry, Labrador tea, crowberry, feather mosses, etc. Bluejoint grass tends to dominate open areas over a wide range of growing sites.

- B. Land Status:
Cook Inlet Region, Inc. (CIRI) owns the surface rights in Section 18, T4N, R11W, Seward Meridian from which Marathon Oil Company will drill the KBU 24-7X well. BLM and CIRI co-manage the coal, oil and gas rights in Section 7, T4N, R11W, Seward Meridian under Lease No. A-028142 into which the KBU 24-7X well will terminate.
- C. Geology, Topography and Soils:
Karlstrom (1964) describes the surficial geology in this area as Quaternary proglacial-lake-bottom sediments. These sediments underlie a terraced and channeled surface between major morainal belts. Quaternary age sediments are as much as 1,000 feet thick and overlie Tertiary rocks of the Kenai group. This group consists mostly of siltstones, fine sandstones and shales. Soil types in the area consist of glacial till, lacustrine deposits of sand and silt and glacial outwash deposits with layers of gravel and sandy gravel. Isolated peat deposits are also present. Elevations for the area generally range from sea level to a little more than 100 feet above sea level. Earthquakes of Richter magnitude 6.0 to 8.8 could occur in the area surrounding the proposed well, causing major structural damage.
- D. Vegetation:
The Proposed Action would occur in and around the Kenai Lowlands area on the east side of Cook Inlet. Because the Kenai Lowlands were created from complex and largely modified moraines, low rolling hills separate the nearly level wetlands of muskeg and swamp. In general, the area is poorly drained and generally free of perma-frost except for isolated lenses beneath bogs or frosted area. Dwarf shrubs usually dominate over a mat of sedges, mosses and lichen which overlies a peaty substrate.

E. Visual Resources:

Visual Resource Inventory (VRM) Class IV is currently assigned to the proposed project area within the Kenai Gas Field. The objective of this class is to provide for management activities which require major modification to the character of the existing landscape. The level of change to the characteristic landscape can be high and management activities may dominate the view and be the major focus of viewer attention.

The 41-18 pad has been in existence since the mid to late 1970's. The area of the pad is in a mostly closed canopy spruce forest with mixed hardwood species. Views from the ground tend to be limited in extent by vegetation and very common to the region.

F. Wildlife:

Moose are common as successional vegetation provides plentiful browse. Other mammals known to inhabit the area include redback voles, red squirrels, muskrats, porcupines and hares (James Montgomery Consulting Engineers, 1992). The Kenai Lowlands support many species of bird and waterfowl. The list of species includes white crowned sparrow, tree swallows, northern or black-backed woodpeckers, juncos, yellow-rumped and yellow warblers, fox sparrows, Lincoln sparrows, Savannah sparrows, least sandpipers, Whimbrels, parasitic jaegers, sandhill cranes, common loons, red-necked grebes, surf scooters, trumpeter swans, greater scaup, American widgeon, arctic terns, mallards, Bonaparte's gulls, Barrow's goldeneyes, red-throated loons and red-necked phalaropes (James M. Montgomery Consulting engineers, 1992, citing a letter from Bailey, 1992; Rosenberg, 1986). Bald eagles nest in the Kenai National Wildlife Refuge. Beaver Lake has a known nest (James M. Montgomery Consulting Engineers, 1992, citing a "personal communication" from Joyce, 1992).

The forested coastal habitats provide year round habitat for black bear, moose, lynx, martin and wolves. Brown bear are found in open habitat. Migrant and resident land birds use the area's shrub and forest communities for nesting. Adjacent coastal mudflats and the intermittent shrub wetlands provide habitat for breeding and migrant shorebirds and waterfowl.

IV. ENVIRONMENTAL CONSEQUENCES

A. Impacts of the Proposed Action:

1. Critical Elements:

a. Air Quality:

Fires, smoke, volcanic eruptions and pollutants drifting from the west can affect visibility and air quality. Air quality may be temporarily affected by dust and exhaust from construction and operational activities.

b. Cultural Resources:

No historic properties are known for the project area. Since all activities will be performed on previously disturbed ground, no new discoveries are expected. No new ground disturbance will occur in the area of development, resulting in no adverse effects upon cultural resources.

c. Subsistence:

The Proposed Action will not occur on Federal Public Lands as defined in ANILCA Sec. 102(3), and therefore does not fall under the authority of the Federal Subsistence Board and Subsistence Management Regulations for the Harvest of Fish and Wildlife on Federal Public Lands in Alaska. The Proposed Action would not incur additional Federal surface disturbance or habitat alteration than what presently exists on the proposed site or on any ancillary facilities that are required for access and other activities. The Proposed Action will not impact the capability of the area to produce a sustainable harvest of Federal subsistence resources.

Therefore, at this time, the Proposed Action will not significantly restrict Federal subsistence uses, decrease the abundance of Federal subsistence resources, alter the distribution of Federal subsistence resources, or limit qualified Federal subsistence user access from currently existing conditions. No further analysis is necessary at this time.

d. T&E Species:

The impact of the Proposed Action and Alternative on threatened and endangered plants and animals and their habitats has been evaluated in accordance with the Endangered Species Act of 1973, as amended. Based on currently available information, the Proposed Action would

not affect any threatened or endangered species or their habitats. Therefore, no consultation with the USFWS is considered necessary pursuant to Section 7 of the Act and none will be undertaken.

e. Water Quality, Surface/Ground:

An on-site water well will be used for drilling and completion fluids needed during the drilling process. Although not anticipated and highly unlikely, a release of natural gas liquid and/or liquid hydrocarbons could impact surface and subsurface water quality. Natural gas liquids would rapidly evaporate and disperse into the atmosphere. Heavier liquids could penetrate the soils and enter the ground waters. Should the release pose potential fire/explosive hazards, it would be burned or ignited, consuming the fuel.

Fuel spills, oil leaks, hydraulic line breaks and similar type “spills” also have potential to impact water quality. Such spills would likely be very small in volume and contained on the well pad at the facilities. These spills would be immediately cleaned up.

2. Geology, Topography and Soils:

The total area of surficial disturbance will be negligible. KBU 24-7X will be drilled from a preexisting drilling pad. Minimal surficial disturbance will be incurred during the rigging and drilling processes. Some minor erosion may occur within transportation corridors due to increased traffic during production.

3. Vegetation:

Vegetation adjacent to the pad may be adversely affected by vehicle dust. Such effects should be minor, given that the construction of KBU 24-7X will occur during the summer when rain is fairly common in the region. Impacts to vegetation would be minimal as the project would occur on an existing gravel pad. No new vegetation clearing outside of the existing pad is expected to occur.

4. Visual Resources:

Visual resource quality may be negatively affected during the construction and drilling operations. Permanent impacts to visual resources should be minimal as surface disturbance and vegetation clearing is expected to be limited by utilizing a pre-existing gravel pad for drilling and existing roads for access.

The proposed action is consistent with a VRM Inventory Class IV objective.

5. Wildlife:

Motor vehicle access to the immediate area surrounding the construction activities is almost exclusively restricted to oil and gas field workers. The increase in human activity and noise around the proposed construction area may temporarily displace existing wildlife in the immediate area. Upon completion of the construction operations, traffic and human activity will be minimal and should cause minimal displacement.

B. Impacts of Alternative #1 - No Action Alternative:

1. Critical Elements:

a. Air Quality:

Road travel to existing wells that surround the proposed KBU 24-7X would still affect the ambient air quality. A potential for surrounding wells to emit particulate matter, methane gas, carbon dioxide, carbon monoxide and nitrous oxides into the atmosphere still exists.

b. Cultural Resources:

No disturbance of any preexisting cultural resources would occur should drilling not take place.

c. Water Quality, Surface/Ground:

No impacts to subsurface resources would occur. No impacts to surface waters or existing hydrologic conditions would be incurred.

2. Vegetation:

Spills, leaks, etc. could still occur on the pad and road system leading up to the proposed KBU 24-7X site due to traffic in and out of the surrounding well pads. Barring that, no vegetative impacts would be expected in the area surrounding the proposed well site, should drilling not occur.

3. Visual Resources:

There will be no impact to visual resources near the proposed well site should drilling not occur. The existing pad will continue to be visible to users passing by the site of the proposed action.

4. Wildlife:

Impacts would be the same as under the Proposed Action due to the existence of the road and accompanying airstrip. However,

wildlife in the well site area would not be subjected to the displacement impacts associated with facility construction and well installation. Vehicular travel on the road would be less, but would still occur as a result of accessing the nearby existing gas wells.

C. Cumulative Impacts:

The Proposed Action associated with the Kenai Unit (KU) would only slightly increase cumulative impacts to the area resources. The KU was established by The Ohio Oil Company in 1959; they began supplying natural gas to Anchorage from the KU in 1961. The KU has been in varying stages of development and production ever since. Given the continued success of existing production wells within the Kenai Unit, the development of the KU may progress for years to come.

The well head facilities could slightly increase air emissions, adding to those already existing. Noise levels during facility construction operations would increase over a period of approximately 30 days. After initial construction was completed, noise levels would be similar to those of existing operations in the vicinity.

Existing operations require little to no monitoring personnel for production to occur. Production of a natural gas well involves the capping of a recently drilled well and transferring the produced gas into a flow line. The captured gas in the flow line is then routed on to a central processing facility (located off-pad) for dewatering and compression. Most flow lines are placed above ground on evenly spaced supports, and tend to follow existing road systems, allowing access to and egress from the well pad. All of the activity would occur, and the infrastructure would be developed if and only if the KBU 24-7X well proves to be successful.

On-site equipment would be minimal. The only visible infrastructure on-site would be the well head blow out prevention stack (attached directly to the well head), a surface grate (installed at ground level, protecting the well casing) and possibly a metal cage/fence around the entire well head and surface grating. All of these protective measures are done to prevent wildlife, humans and debris from entering and altering the well, well casing and/or the overall well head structure.

V. CONSULTATION AND COORDINATION

A. Persons and Agencies Consulted:

Will Tank of Marathon Oil Company was consulted on matters of land status, well location and general drilling and production operations. Melissa Ainsworth was also consulted regarding surface use matters involving Marathon Oil Company and CIRI. CIRI was contacted and informed of the proposed activities to take place on their surface.

- B. List of Preparers:
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BIBLIOGRAPHY

Anchorage Field Office, 1999, Environmental Assessment: Proposed Kenai Beluga Unit Wells KBU 33-6, and KBU 42-7, 15pp.

Anchorage Field Office, 2002, Environmental Assessment: Proposed Nicolai Creek Unit Well NCU - #10, 12pp.

James M. Montgomery Consulting Engineers, 1992, Review Draft - Stormy Lake East/Southeast Swanson Environment, for ARC Alaska, Inc., Anchorage, Alaska.

Karlstrom, T.N.V., 1964, Quaternary Geology of the Kenai Lowland and Glacial History of the Cook Inlet Region, Alaska, U.S. Geological Survey Professional Paper 443, Washington, D.C., 69 pp.

Rosenberg, D.H., 1986, Wetland Types and Bird Use of Kenai Lowlands, U.S. Fish and Wildlife Service, Anchorage, Alaska.