



# United States Department of the Interior

BUREAU OF INDIAN AFFAIRS  
Great Plains Regional Office  
115 Fourth Avenue S.E.  
Aberdeen, South Dakota 57401



IN REPLY REFER TO:  
DESCRM  
MC-208

SEP 27 2010

## MEMORANDUM

TO: Superintendent, Fort Berthold Agency

FROM: <sup>Acting</sup> Regional Director, Great Plains Region

SUBJECT: Environmental Assessment and Finding of No Significant Impact

In compliance with the regulations of the National Environmental Policy Act (NEPA) of 1969, as amended, for the proposed Environmental Assessment to Authorize Land Use for drilling up to three wells on the Fort Berthold Reservation, an Environmental Assessment (EA) has been completed and a Finding of No Significant Impact (FONSI) has been issued.

All the necessary requirements of the National Environmental Policy Act have been completed. Attached for your files is a copy of the EA, FONSI and Notice of Availability. The Council on Environmental Quality (CEQ) regulations require that there be a public notice of availability of the FONSI (1506.6(b)). Please post the attached notice of availability at the agency and tribal buildings for 30 days.

If you have any questions, please call Marilyn Bercier, Regional Environmental Scientist, Division of Environment, Safety and Cultural Resources Management, at (605) 226-7656.

Attachment

cc: Marcus Levings, Chairman, Three Affiliated Tribes (with attachment)  
Perry "No Tears" Brady, THPO (with attachment)  
Roy Swalling, BLM, Dickenson, ND (with attachment)  
John Shelman, US Army Corps of Engineers  
Dawn Charging, Virtual One Stop Shop  
Jeffrey Towner, Field Supervisor, U.S. Fish and Wildlife Service

## Finding of No Significant Impact

Kodiak Oil and Gas (USA) Inc.

**Environmental Assessment to Authorize Land Use for Up to Three Exploratory Oil and Gas Wells from One Surface Location. Charging Eagle 15-22-15-3H, Charging Eagle 15-22-15-4H, and Charging Eagle 15-22-27H**

**Fort Berthold Indian Reservation  
Dunn County, North Dakota**

The U.S. Bureau of Indian Affairs (BIA) has received a proposal to authorize the land use by Kodiak for the construction and installation of up to three horizontal oil/gas wells from a single well pad, approximately 10 miles northwest of Twin Buttes, ND and approximately 4 miles south of Lake Sakakawea, in the SW¼ SE¼ of Section 22, Township (T) 147 North (N), Range (R) 92 West (W), 5<sup>th</sup> Prime Meridian (P.M.), Dunn County, North Dakota.

Associated federal actions by BIA include determinations of effect regarding cultural resources, approvals of leases, rights-of-way and easements, and a positive recommendation to the Bureau of Land Management regarding the Applications for Permit to Drill.

Potential of the proposed actions to impact the human environment is analyzed in the attached Environmental Assessment (EA), as required by the National Environmental Policy Act. Based on the recently completed EA, I have determined that the proposed project will not significantly affect the quality of the human environment. No Environmental Impact Statement is required for any portion of the proposed activities.

This determination is based on the following factors:

1. Agency and public involvement was solicited and environmental issues related to the proposal were identified.
2. Protective and prudent measures were designed to minimize impacts to air, water, soil, vegetation, wetlands, wildlife, public safety, water resources, and cultural resources. The remaining potential for impacts was disclosed for both the proposed action and the No Action alternative.
3. Guidance from the U.S. Fish and Wildlife Service has been fully considered regarding wildlife impacts, particularly in regard to threatened or endangered species. This guidance includes the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.) (NEPA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", and the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA).
4. The proposed actions are designed to avoid adverse effects to historic, archaeological, cultural and traditional properties, sites and practices. Compliance with the procedures of the National Historic Preservation Act is complete.
5. Environmental justice was fully considered.
6. Cumulative effects to the environment are either mitigated or minimal.
7. No regulatory requirements have been waived or require compensatory mitigation measures.
8. The proposed projects will improve the socio-economic condition of the affected Indian community.

  
\_\_\_\_\_  
Regional Director

9/27/10  
\_\_\_\_\_  
Date

# **KODIAK OIL & GAS (USA) INC.**



## **ENVIRONMENTAL ASSESSMENT**

**Prepared for: US Bureau of Indian Affairs  
Great Plains Regional Office  
Division of Environmental, Safety and Cultural Resources**

**Up to Three Exploratory Wells with One Surface Location**

**Charging Eagle 15-22-15-3H, Charging Eagle 15-22-15-4H,  
and Charging Eagle 15-22-27H**

**Fort Berthold Indian Reservation**

**September 2010**

## TABLE OF CONTENTS

<b>1.0</b>	<b>Purpose and Need for Proposed Action</b>	<b>1</b>
<b>2.0</b>	<b>Proposed Action and Alternatives</b>	<b>3</b>
2.1	Field Camps	3
2.2	Access Roads	3
2.3	Well Pads	4
2.4	Drilling	4
2.5	Casing and Cementing	5
2.6	Completion and Evaluation	6
2.7	Commercial Production	6
2.8	Construction Details at Individual Sites	7
2.9	Reclamation	8
2.10	Preferred Alternative	9
<b>3.0</b>	<b>Affected Environment, Impacts, and Mitigation</b>	<b>9</b>
3.1	Introduction	9
3.2	Climate, Geologic Setting, and Land Use	9
3.2.1	Geologic Setting and Land Use Impacts/Mitigation	10
3.3	Soils	11
3.3.1	Soils Impacts/Mitigation	12
3.4	Water Resources	12
3.4.1	Surface Water	13
3.4.1.1	Surface Water Impacts/Mitigation	14
3.4.2	Ground Water	14
3.4.2.1	Ground Water Impacts/Mitigation	14
3.5	Air Quality	15
3.5.1	Air Quality Impacts/Mitigation	16
3.6	Threatened and Endangered Species	17
3.6.1	Threatened and Endangered Species Impacts/Mitigation	19
3.7	Wetlands, Eagles, Migratory Birds and Other Wildlife, and Vegetation	19
3.7.1	Wetlands	20
3.7.1.1	Wetland Impacts/Mitigation	20
3.7.2	Bald and Golden Eagles	20
3.7.2.1	Bald and Golden Eagle Impacts/Mitigation	22
3.7.3	Migratory Birds and Other Wildlife	22
3.7.3.1	Migratory Birds and Other Wildlife Impacts/Mitigation	22
3.7.4	Vegetation	23
3.7.4.1	Vegetation Impacts/Mitigation	24
3.8	Cultural Resources	25
3.8.1	Cultural Resources Impacts/Mitigation	25



<b>3.9</b>	<b>Socioeconomic Conditions</b>	<b>26</b>
3.9.1	Socioeconomic Impacts/Mitigation	27
<b>3.10</b>	<b>Environmental Justice</b>	<b>27</b>
3.10.1	Environmental Justice Impacts/Mitigation	27
<b>3.11</b>	<b>Infrastructure and Utilities</b>	<b>27</b>
3.11.1	Infrastructure and Utility Impacts/Mitigation	27
<b>3.12</b>	<b>Public Health and Safety</b>	<b>28</b>
3.12.1	Public Health and Safety Impacts/Mitigation	29
<b>3.13</b>	<b>Cumulative Considerations</b>	<b>29</b>
3.13.1	Past, Present, and Reasonably Foreseeable Actions	29
3.13.2	Cumulative Impacts	31
<b>3.14</b>	<b>Irreversible and Irretrievable Commitment of Resources</b>	<b>33</b>
<b>3.15</b>	<b>Short-Term Use of the Environment vs Long-Term Productivity</b>	<b>33</b>
<b>3.16</b>	<b>Permits</b>	<b>33</b>
<b>3.17</b>	<b>Environmental Commitments / Mitigation</b>	<b>33</b>
<b>4.0</b>	<b>Consultation and Coordination</b>	<b>36</b>
<b>5.0</b>	<b>List of Preparers</b>	<b>43</b>
<b>6.0</b>	<b>References</b>	<b>43</b>

## 1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

Kodiak Oil & Gas (USA) Inc (Kodiak) is proposing to drill up to three horizontal oil/gas wells on two allotted land locations within the Fort Berthold Indian Reservation to evaluate and potentially develop the commercial potential of natural resources. These developments are proposed on lands held in trust by the United States in Dunn County, North Dakota. The US Bureau of Indian Affairs (BIA) is the surface management agency for potentially affected tribal lands and individual allotments. The BIA also holds title to the subsurface mineral rights. The proposed surface location, which is shown in Figure 1, is approximately 10 miles northwest of Twin Buttes, ND and is approximately 4 miles south of Lake Sakakawea. Kodiak's proposed surface location, with the potential to drill three wells total, is in the following location:

Charging Eagle #15-22:                      SWSE Section 22                      T147N - R92W

The economic development of available resources and associated BIA actions are consistent with BIA's general mission. Leasing and development of mineral resources offers substantial economic benefits to both the Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nations and to the individual members of these tribes. Oil and gas exploration and development activities are conducted under authority of the Indian Mineral Leasing Act of 1938 (25 USC 396a, *et seq.*), the Indian Mineral Development Act of 1982 (25 USC 2101, *et seq.*), the Federal Onshore Oil and Gas Royalty Management Act of 1982 (30 USC 1701, *et seq.*), and the Energy Policy Act of 2005 (42 USC 15801, *et seq.*). BIA actions in connection with the proposed project are largely administrative and include approval of leases, easements and rights-of-way, determinations regarding cultural resource effects and recommendations to the Bureau of Land Management (BLM) regarding approval of Applications for Permit to Drill (APDs).

These proposed federal actions require compliance with the National Environmental Policy Act of 1969 (NEPA) and regulations of the Council on Environmental Quality (CEQ, 40 CFR 1500-1508). Analysis of the proposal's potential to impact the human environment is expected to both improve and explain federal decision making. An APD submitted by Kodiak will describe the developmental, operational and reclamation procedures and practices that contribute to the technical basis of this Environmental Assessment (EA). The procedures and practices described in the application are critical elements in both the project proposal and the BIA's decision regarding environmental impacts. This EA will result in either a Finding of No Significant Impact (FONSI) or a decision to prepare an Environmental Impact Statement (EIS).

There are several components to each of the proposed actions. Both new and improved roads are needed to access proposed well sites. Well pads would be constructed to accommodate drilling operations. Pits for drilled cuttings would be constructed, used, and reclaimed. Drilling and completion information could result in long-term commercial production at some or all of the sites, in which case supporting facilities would be installed. The working portions of well pads and the access roads would remain in place during commercial production. All project components would eventually be abandoned

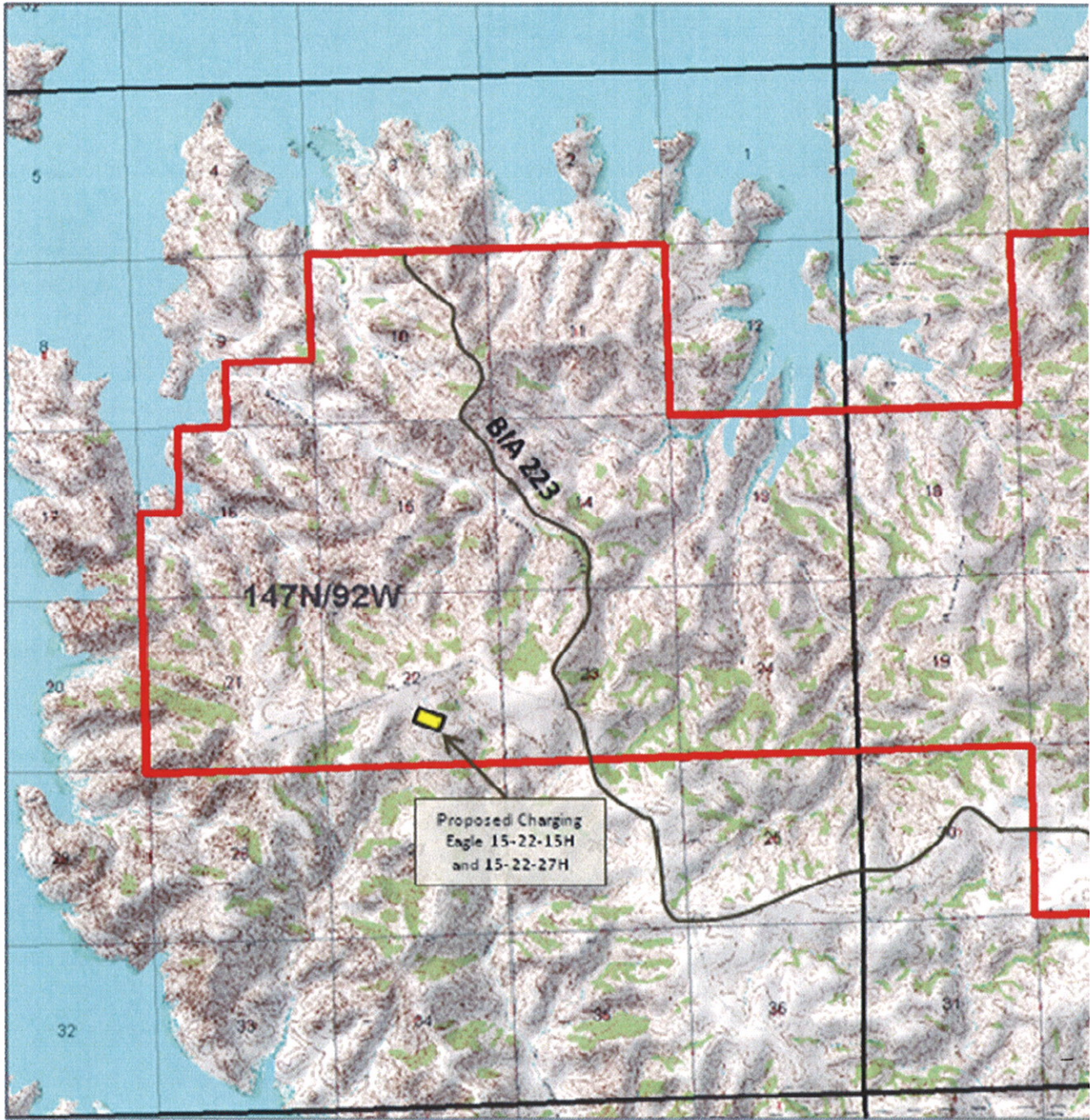


Figure 1: Project Location: Charging Eagle 15-22 location

and reclaimed, as specified in this document and the APD and according to any other federal conditions, unless formally transferred with federal approval to either the BIA or the landowner. The proposed wells are exploratory, in that results could also support developmental decisions on other leases in the surrounding area, but this EA addresses only the installation and possible long-term operation of the listed wells and directly associated infrastructure and facilities. Additional NEPA analysis, decisions and federal actions will be required prior to any other development.

Any authorized project will comply with all applicable federal, state and tribal laws, rules, policies, regulations and agreements. No construction, drilling or other ground-disturbing operations will begin until all necessary leases, easements, surveys, clearances, consultations, permissions, determinations and permits are in place.

## **2.0 Proposed Action and Alternative**

The No Action Alternative must be considered within an Environmental Assessment. If this alternative is selected, BIA would not approve leases, rights-of-way or other administrative proposals for one or more of the proposed projects. Applications for Permit to Drill (APD) for at least one of up to three proposed wells would not be approved. Current land use practices would continue at the No Action sites. Development under other oil and gas leases would remain a possibility, but No Action is the only available or reasonable alternative to the specific proposals considered in this document.

This document analyzes the potential impacts of specific proposed actions – exploratory oil/gas wells on allotted surface and mineral estate within the boundaries of the Fort Berthold Indian Reservation in Dunn County, North Dakota. The proposed wells would test the commercial potential of the Middle Bakken Dolomite Member of the Bakken Formation. Site-specific actions would or might include several components including access roads, construction of well pads, drilling operations, installation of production facilities, tanker traffic and reclamation.

All construction activities would follow lease stipulations, practices and procedures outlined in this document, the APD, the guidelines and standards in Surface Operating Standards for Oil and Gas Exploration and Development (BLM/US Forest Service, Fourth Edition, also known as the Gold Book), and any conditions added by either BIA or BLM. All lease operations would be conducted in full compliance with applicable laws and regulations, including 43 CFR 3100, Onshore Oil and Gas Orders 1, 2, 6 and 7, approved plans of operations and any applicable Notices to Lessees.

### **2.1 Field Camps**

Self-contained trailers may house a few key personnel during drilling operations, but any such arrangements would be very short-term. No long-term residential camps are proposed. Construction and drilling personnel would commute to project sites, most likely from within or near the reservation. Human waste would be collected in standard portable chemical toilets or service trailers located on-site, then transported off-site to a state-approved wastewater treatment facility. Other solid waste would be collected in enclosed containers and disposed of at a state-approved facility.

### **2.2 Access Roads**

To service the proposed surface location, a total of approximately 1,602 feet (0.30 miles) of new road would be constructed or existing two-track trail would be improved. A maximum disturbed right-of-way



(ROW) width of 66 feet could result in as much as approximately 3 acres of surface disturbance. Details of road construction are addressed in Kodiak's Multi-Point Surface Use and Operations Plan in the APD. Signed agreements are in place allowing road construction across affected tribal land and surface allotments.

Construction would follow road design standards outlined in the Gold Book. A minimum of six (6) inches of topsoil would be stripped from the access road corridors, with the stockpiled topsoil redistributed on the outslope areas of the borrow ditches following road construction. These borrow ditch areas would be reseeded as soon as practical with a seed mixture determined by the BIA. If commercial production is established from a proposed location, the access road would be graveled with a minimum of four (4) inches of gravel and the roadway would remain in place for the life of the well(s). Details of road construction are addressed in the Multi-Point Surface Use and Operations Plan in the APD.

### **2.3 Well Pad**

The proposed well pad would consist mainly of 1) an area leveled for the drilling rig and related equipment; and 2) a pit excavated for drilling fluids, drilled cuttings and fluids produced during drilling. About 25,000 cubic yards of soil would be cut and/or filled. The Well pad area would be cleared of vegetation, stripped of topsoil and graded to the specifications in the approved APD. Topsoil would be stockpiled and stabilized until disturbed areas were reclaimed and re-vegetated. Excavated subsoils would be used in pad construction, with the finished well pads graded to ensure positive water drainage away from the drill site. Erosion control would be maintained through prompt re-vegetation and by constructing all necessary surface water drainage control, including berms, diversion ditches and waterbars.

The level area of the pad (including reserve pits for drilled cuttings) would be up to approximately 500' x 600' (6.9 acres). Cut and fill on pad edges would result in a total disturbance of up to about 5 acres for the pad, in addition to approximately 3 acres for road construction. About a third of the pad would be fill. Details of pad construction and reclamation are described and diagrammed in the Surface Use Plan of each well's APD. Details of construction on the proposed site are shown in Section 2.8 of this EA.

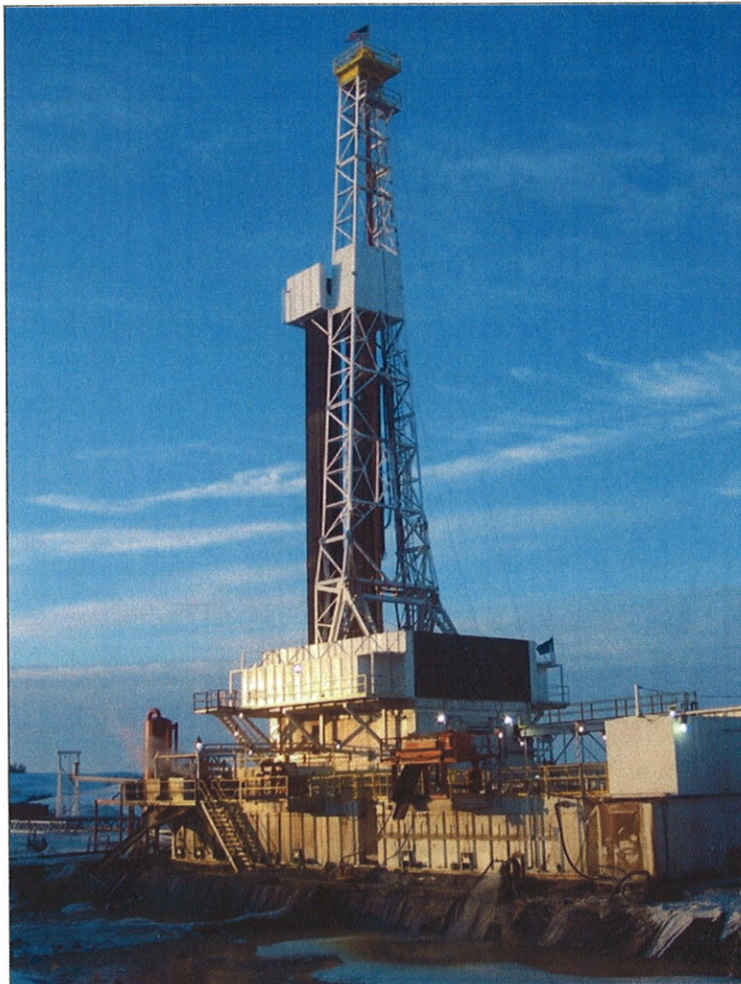
### **2.4 Drilling**

Kodiak plans to submit APDs to the BLM in June 2010, proposing to drill from allotted surfaces to access resources within variable spacing units. The BLM North Dakota Field Office will not approve an APD until BIA completes its NEPA process, approves ROWs and recommends the APD for approval. No drilling will begin until approved permits have been obtained from both the BLM and the North Dakota Industrial Commission (NDIC).

Drilling would be vertical to a depth of 9,500 - 10,500 feet. The minimum setback of 500 feet (NDAC 43-02-03-18) from section lines would be maintained or achieved through directional drilling. Drilling would become roughly horizontal at a measured depth of 10,700 - 11,700 feet (with true vertical depth of about 10,500 feet), followed by the drilling of lateral reaches of 4,500 - 10,500 feet within the Middle Bakken Dolomite Member. Total well depths would range from approximately 15,000 - 21,000 feet.

Rig transport and on-site assembly would take about seven days. Drilling operations would require about 30 days to reach the target depth, using a rotary drilling rig similar to that shown in Figure 2.3. For about the first 2,000-2,400 feet of hole drilled, a fresh-water based mud system with non-hazardous additives such as bentonite would be used to minimize contaminant concerns. Water would be obtained

from a commercial source for this drilling stage, using about 50 gallons of water per foot of hole drilled (a total of about 100,000 gallons) per well.



**Figure 2.3 Unit 117 Drilling Rig at Kodiak's Moccasin Creek 16-34-2H**

After setting and cementing the surface casing, an oil-based mud (about 70% diesel fuel and 30% water) would be used to drill the remainder of the well bore. Oil-based drilling fluids can reduce the potential for hole sloughing while drilling through water-sensitive formations, such as shales. The three wells would use about 168,000 gallons of diesel fuel, with about 65% of that eventually recovered and recycled into steel tanks for re-use elsewhere. Horizontal drilling would utilize either saltwater-based or oil-based drilling fluid. On the surface, toxic fluids would be contained in steel tanks placed on plastic/vinyl liners, then collected during drilling by centrifuging returns to separate the cuttings from fluids. Any free fluids remaining in the reserve pits would be removed and disposed of in accordance with NDIC rules and regulations.

Cuttings generated from drilling would be deposited in the reserve pit on each individual well pad. Reserve pits would be lined with an impervious (plastic or vinyl) liner to prevent drilling fluid seepage and contamination of the underlying soil. Liners would be installed over sufficient bedding (either straw or dirt) to cover any rocks, overlapping the pit walls and extending under the mud tanks. Liners would be held in place by dirt and/or rocks. To protect wildlife and livestock, the entire location would be fenced completely prior to use and a cattle guard would be installed at the access road into the site. Fencing would be installed in accordance with Gold Book guidelines and maintained until the reserve pits are backfilled and reclaimed. The reserve pit would be netted in the interval between drilling and reclamation, following guidance from the US Fish and Wildlife Service.

## **2.5 Casing and Cementing**

Surface casing (9 5/8 inch) would be set to approximately 2,500 feet (50 feet into the Pierre Shale, depending on geologic data) and cemented back to surface, isolating all near-surface freshwater aquifers in the project area. Intermediate casing (7 inch) would be installed from the surface to 10,200-11,500 feet and cemented from there to a point approximately 3,300 feet below ground surface. The Dakota Formation is the shallowest potential hydrocarbon zone and is expected to be encountered at a depth of about 5,100 feet. Production casing (4 1/2 inch) would be installed laterally in the Bakken. Casing



and cementing operations would be conducted in full compliance with Onshore Oil and Gas Order 2. The lateral casing in the Bakken formation would be between 1-2 miles long and uncemented.

## 2.6 Completion and Evaluation

After a well has been drilled and cased, a completion (work-over) rig will be moved onto the site. For wells of the depth proposed, approximately 30 days are typically needed to clean out the well bore, pressure test the casing, perforate and/or fracture the horizontal portion of the hole, and run production tubing for commercial production. If the target formation is to be fractured to stimulate production, the typical procedure is to pump downhole a mixture of sand and a carrier (eg: water, nitrogen, gelling agents) under extreme pressure. The resulting fractures are propped open by the sand, increasing the capture zone of the well and maximizing efficient drainage of the field. After fracturing, the well is typically flowed back to the surface to recover fracture fluids and remove excess sand. Wells with long laterals would use about 2.1 million gallons of water and those with short laterals would use about 1.0 million gallons. Fluids utilized in the completion procedure would be captured either in the reserve pit or in tanks for disposal in strict accordance with adopted NDIC rules and regulations.

## 2.7 Commercial Production

If drilling, testing and production support commercial production from any of the proposed locations, additional equipment would be installed, including a pumping unit at the well head, a vertical heater/treater, tanks (usually four 400 barrel steel tanks), and a flare/production pit. An impervious dike sized to hold 100% of the capacity of the largest tank plus one full day's production would surround production tanks and the heater/treater. Load out lines would be located inside the diked area, with a heavy screen-covered drip barrel installed under the outlet. A metal access staircase would protect the dike and support flexible hoses used by tanker trucks. The BIA would choose an inconspicuous paint color for all permanent aboveground production facilities, usually from colors recommended either by the BLM or the Rocky Mountain Five-State Interagency Committee. A typical producing rig is shown in Figure 2.7 and more detail is included in the APD.

Oil would be collected in tanks installed on location and periodically trucked to an existing oil terminal for sales. Any produced water would be captured in tanks and periodically trucked to an approved disposal site. The frequency of trucking activities for both product and water would depend upon volumes and rates of production.

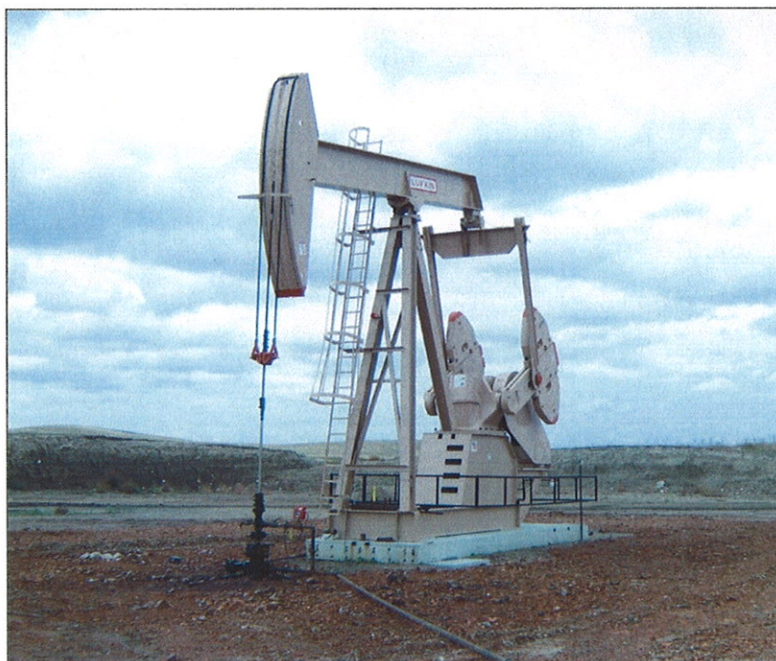


Figure 2.7 Pumping Unit at Kodiak well in Montana

The duration of production operations cannot be reliably predicted. Large volumes of gas are not expected from these locations. Small volumes would be flared in accordance with Notice to Lessees



(NTL) 4A and BLM-adopted NDIC regulations, which prohibit unrestricted flaring for more than the initial year of operation (NDCC 38-08-06.4). Results could also encourage additional exploration on the Reservation. Should future oil/gas exploration activities be proposed by Kodiak on the Fort Berthold reservation, those proposals and associated federal actions would require additional NEPA analysis and BIA consideration prior to implementation.

## 2.8 Construction Details at Individual Sites

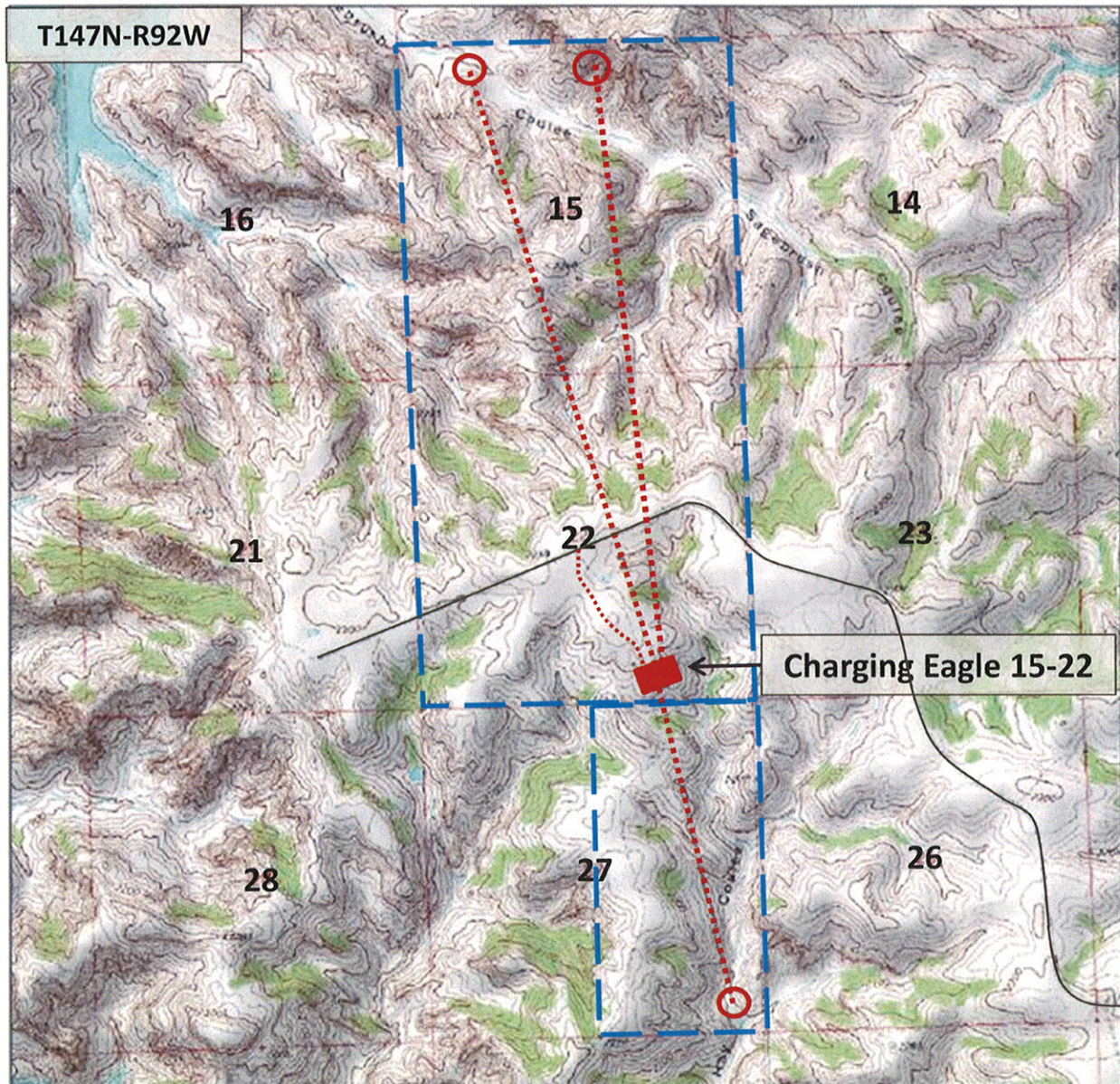


Figure 2.8a Charging Eagle 15-22



## Charging Eagle # 15-22 Surface Location

The Charging Eagle #15-22 site is approximately 10 miles northwest of Twin Buttes, North Dakota. As shown in Figure 2.8a, the access road for this site will include about 1,602 feet of new construction. The proposed access road would disturb 2.43 acres, and the well pad would disturb up to 7 acres, for a maximum total surface disturbance of approximately 9.43 acres. The spacing unit illustrated in Figure 2.8a consists of 1280 acres (+/-) in Sections 15 and 22, T147N-R92W, with the surface location in the SWSE of Section 22 and two bottomhole locations in the N2 of Section 15, with potential for another bottomhole in the SE of Section 27 on a 320 acre spacing unit. Approximately 25,000 yd<sup>3</sup> would be excavated to level the pad and create the reserve pit. The rest of the pad would be covered with about 18,000 yd<sup>3</sup> of fill. Two heater-treaters may be installed on fill, but the reserve pit and all other production equipment will be on cut areas, facilitating reclamation.

Drilling for this well would be vertical to a depth of approximately 9,800 feet, turning horizontal at a total vertical depth of approximately 10,400 feet and a measured depth of approximately 10,800 feet. A lateral reach of 9,000 feet would result in total well depth of approximately 20,000 feet with a true vertical depth at bottomhole of about 10,400 feet. Drilling target is approximately 9,100 feet north-northwest of the surface location, at about 600' FNL and 600' FWL in the NWNW of Section 15. This proposed bottomhole location is within NDIC setbacks of 500' from each section line.

### 2.9 Reclamation

The reserve pit and drilled cuttings would be treated, solidified, backfilled, and buried as soon as possible after well completion. Controlled mixing of cuttings with a non-toxic reagent (such as fly ash) causes an irreversible reaction that quickly results in an inert, solid material. Oily residue is dispersed and captured, making releases to the environment unlikely. The alkaline nature of the stabilized material also chemically stabilizes various metals that may be present, primarily by transforming them into less soluble compounds. Treated material would then be buried in the reserve pit, overlain by at least four feet of overburden as required by adopted NDIC regulations.

If commercial production equipment is installed, the well pad would be reduced in size to about 300 x 200 feet, with the rest of the original pad reclaimed. The outslope portions of roads would be covered with stockpiled topsoil and re-seeded with a seed mixture determined by the BIA, reducing the running surface to about 16' wide and reclaiming the surface to the road edge. The working area of each well pad and the running surface of access roads would be surfaced with scoria or crushed rock obtained from a previously approved location. Other interim reclamation measures to be accomplished within the first year include reduction of the cut and fill slopes, redistribution of stockpiled topsoil, installation of erosion control measures, and reseeded as recommended by the BIA.

Final reclamation would occur either in the very short term if the proposed well is commercially unproductive, or later upon final abandonment of commercial operations. All disturbed areas would be reclaimed, reflecting the BIA view of oil and gas exploration and production as temporary intrusions on the landscape. All facilities would be removed, well bores would be plugged with cement and dry hole markers would be set. Access roads and work areas would be leveled or backfilled as necessary, scarified, re-contoured, and re-seeded. Exceptions to these reclamation measures might occur if the BIA approves assignment of an access road either to the BIA roads inventory or to concurring surface allottees. The Surface Use Plan within the APD contains further detail regarding both interim and final reclamation measures.

## 2.10 Preferred Alternative

The preferred alternative is to complete all administrative actions and approvals necessary to authorize or facilitate oil and gas developments at the two proposed well locations.

# Chapter 3 Description of the Affected Environment and Impacts

## 3.1 Introduction

This chapter describes the existing conditions within the study area. The existing conditions, or affected environment, are the baseline conditions that may be affected by the proposed action. This chapter also summarizes the positive and negative direct environmental impacts of the project alternatives, as well as cumulative impacts. Indirect impacts are discussed in impact categories where relevant. Information regarding the existing environment, potential effects to the environment resulting from the proposed alternative, and avoidance, minimization, and/or mitigation measures for adverse impacts is included.

## 3.2 Climate, Geologic Setting, and Land Use

The proposed well and access road are situated geologically within the Williston basin, where the shallow structure consists of sandstones, silts and shales dating to the Tertiary Period (65 to 2 million years ago), including the Sentinel Butte and Golden Valley Formations. The underlying Bakken Formation is a well-known source of hydrocarbons; its middle member is targeted by the proposed projects. Although earlier oil/gas exploration activity within the reservation was limited and commercially unproductive, recent advances in drilling technologies, including horizontal drilling techniques, now make accessing oil in the Bakken Formation feasible.

According to data collected by the Natural Resources Conservation Service from 1971–2000 at Dunn Center, temperatures in excess of 80 degrees Fahrenheit are common in summer months. The area receives approximately 16.5 inches of rain annually, predominantly during spring and summer. Winters in this region are cold, with temperatures often falling near zero degrees Fahrenheit. Snow generally remains on the ground from November to March, and approximately 38.5 inches of snow are received annually.

The topography within the project areas is primarily identified as part of the Missouri Plateau ecoregion, which is unglaciated with rolling plains of silt, sandstone, and shale. The western and southern portions of the Fort Berthold Reservation consist of prairie grasslands and buttes. The northern and eastern areas of the reservation provide fertile farmland. The proposed project areas are located within a predominately rural area; land use consists primarily of grasslands (67%) and cultivated lands (28%). *Please refer to Figure 3-1, Land Use.* Additional surrounding land uses include shrubland and barrenland.



**Figure 3-1, Land Use**

### 3.2.1 Geologic Setting and Land Use Impacts/Mitigation

Alternative A (No Action) — Alternative A would not impact land use.

Alternative B (Proposed Action) — Alternative B would result in the conversion of approximately 8.00 acres of land from present uses to part of an exploratory oil and gas network. ***Please refer to Table 3.1, Summary of Land Use Conversion.***



Table 3.1 Summary of Land Use Conversion			
Well Site(s)	Max Well Pad Acres	Max Access Road Acres	Total Acres
Charging Eagle	5.00	3.00	8.00
<b>Total</b>			<b>8.00</b>

Mineral resources would be impacted through the development of oil and gas resources at the proposed well sites, as is the purpose of this project. Impacts to the geologic setting and paleontological resources are not anticipated.

### 3.3 Soils

The NRCS (Natural Resource Conservation Service) Soil Survey of Dunn County dates from 1982, with updated information available online through the NRCS Web Soil Survey. There are five soil types identified within the project impact areas. Location and characteristics of these soils are identified in *Table 3.2, Soils*.

Table 3.2 Soils									
Well Site(s)	Map Unit Symbol	Soil Name	Percent Slope	Composition (in upper 60 inches)			Erosion Factor <sup>1</sup>		Hydrologic Soil Group <sup>2</sup>
				% sand	% silt	% clay	T	Kf	
Charging Eagle	4B	Arnegard loam	2 to 6	40	37	23	5	.24	B
	8C	Cabba-Chama silt loams	6 to 9	18	57	25	2	.32	D
	42B	Lefor fine sandy loam	0 to 6	71	18	11	3	.20	C
	42C	Lefor fine sandy loam	6 to 9	71	18	11	3	.20	C
	81C	Vebar-Parshall fine sandy loams	6 to 9	75	15	10	3	.49	B

The majority of the listed soils are moderately susceptible to sheet and rill erosion and can tolerate moderate to high levels of erosion without loss of productivity. These soils generally have medium runoff potential. Depth to the water table is recorded at greater than six feet for each of these soil types. None of the soils listed within the project impact areas are susceptible to flooding or ponding.

<sup>1</sup> Erosion Factors indicate susceptibility of a soil to sheet and rill erosion by water. Kf indicates the erodibility of material less than two millimeters in size. Values of K range from 0.02 to 0.69. Higher values indicate greater susceptibility. T Factors estimate maximum average annual rates of erosion by wind and water that will not affect crop productivity. Tons/acre/year range from 1 for shallow soils to 5 for very deep soils. Soils with higher T values can tolerate higher rates of erosion without loss of productivity.

<sup>2</sup> Hydrologic Soil Groups (A, B, C, and D) are based on estimates of runoff potential according to the rate of water infiltration under the following conditions: soils are not protected by vegetation, soils are thoroughly wet, and soils receive precipitation from long-duration storms. The rate of infiltration decreases from Group A (high infiltration, low runoff) to D (low infiltration, high runoff).

### 3.3.1 Soil Impacts/Mitigation

Alternative A (No Action) — Alternative A would not impact soils.

Alternative B (Proposed Action) – Construction activities associated with the proposed well site and access road would result in soil disturbances, though impacts to soils associated with the proposed action are not anticipated to be significant. Stockpile quantities for each location were calculated using an assumed 6-inches of existing topsoil. The following identifies topsoil requirements for the site:

- *Charging Eagle* – A minimum of 3,560 cubic yards of topsoil and 18,095 cubic yards of material for future site reclamation would be stockpiled on site.

Based on NRCS Soil Survey data, topsoil exists in excess of 18 inches at the well site, yielding a sufficient quantity of topsoil for construction and reclamation activities. Topsoil and embankment stockpiles are proposed to be located on the south side of the Charging Eagle site. The stockpiles have been positioned to assist in diverting runoff away from disturbed areas, thus minimizing erosion.

Soil impacts would be localized, and BMPs would be implemented to minimize these impacts. Surface disturbance caused by well development, road improvements, and facilities construction would result in the removal of vegetation from the soil surface. This can damage soil crusts and destabilize the soil. As a result, the soil surface could become more prone to accelerated erosion by wind and water. BMPs used to reduce these impacts would include the use of erosion and sediment control measures during and after construction, segregating topsoil from subsurface material for future reclamation, reseeding of disturbed areas, the use of construction equipment appropriately sized to the scope and scale of the project, ensuring the road gradient fits closely with the natural terrain, and maintaining proper drainage. According to discussions at the field on-site assessment and standard industry practices, BMPs identified in the BLM Gold Book shall be utilized to further minimize site erosion.

Another soil resources issue is soil compaction, which can occur by use of heavy equipment. When soil is compacted, it decreases permeability and increases surface runoff. This is especially evident in silt and clay soils. In addition, soils may be impacted by mixing of soil horizons. Soil compaction and mixing of soil horizons would be minimized by the previously discussed topsoil segregation.

Contamination of soils from various chemicals and other pollutants used during oil development activities is not anticipated. In the rare event that such contamination may occur, the event shall be reported to the BLM and the North Dakota Department of Health, and the procedures of the surface management agency shall be followed to contain spills and leaks.

### 3.4 Water Resources

The Federal Water Pollution Control Act of 1972, as amended by the Clean Water Act of 1977, provides authority to the EPA (Environmental Protection Agency) for establishing water quality standards, controlling discharges into surface and ground waters, developing waste treatment management plans and practices, and issuing permits for discharges of pollutants (Section 402). It also provides the authority to the US Army Corps of Engineers for issuing permits for discharges of dredged or fill material (Section 404). Within the Fort Berthold Reservation, the Missouri River and Lake Sakakawea are both considered navigable waters and are therefore subject to Section 10 of the Rivers and Harbors Act of 1899.

### 3.4.1 Surface Water

The project area is situated in the Great Plains region of North Dakota that borders the badlands to the west. This is an arid area with few isolated surface water basins. The majority of the surface waters in the region are associated with the Missouri River, Lake Sakakawea, and tributaries to these water bodies. Surface water generally flows overland until draining into these systems.

The proposed well site is located in the Lake Sakakawea basin, meaning surface waters within this basin drain to Lake Sakakawea. **Please refer to Figure 3-2, Surface Water Resources, for a summary of watersheds and sub-watersheds encompassing the project area.**

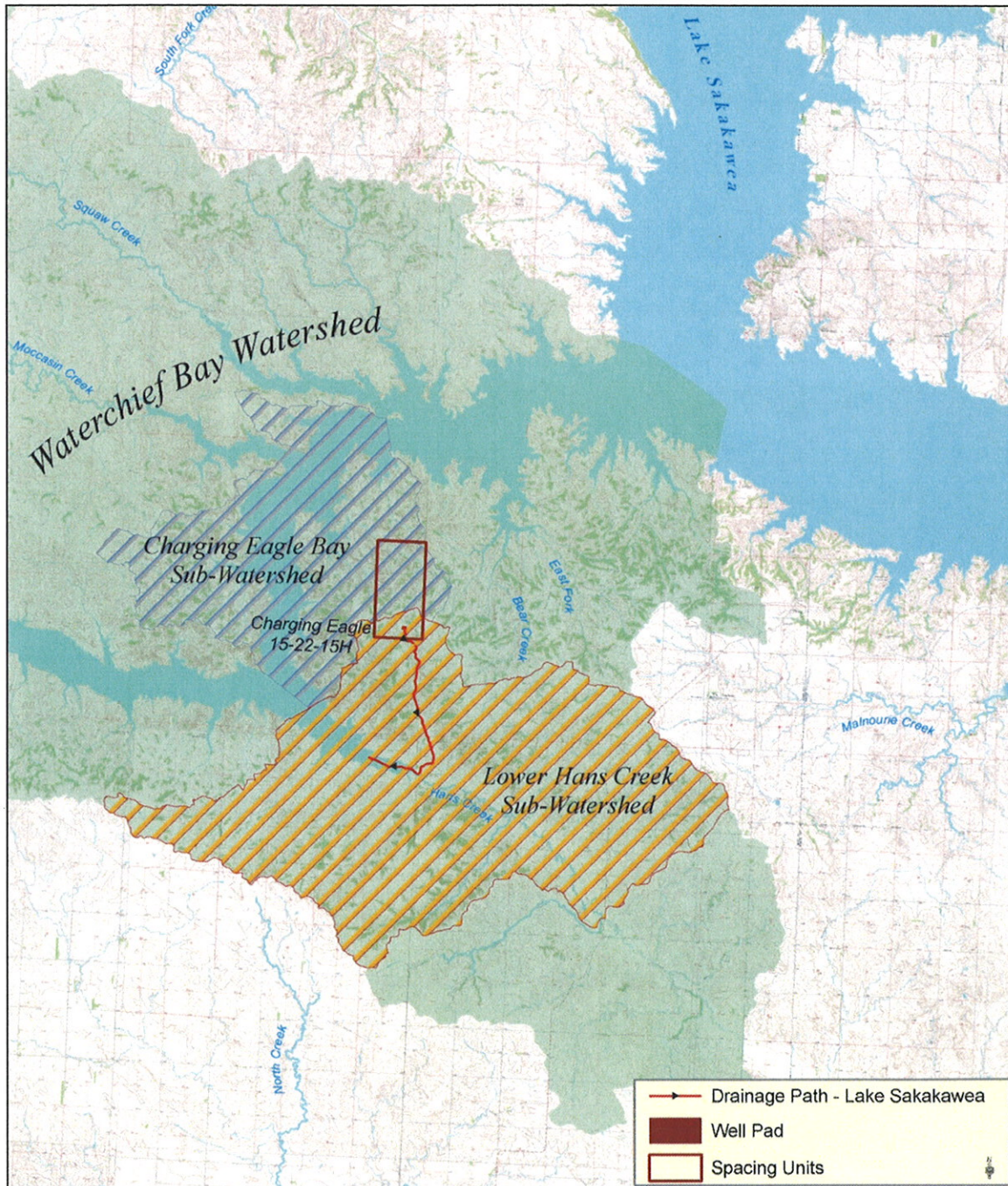


Figure 3-2, Surface Water Resources



Runoff throughout the study area is by sheetflow until collected by ephemeral and perennial streams draining to Lake Sakakawea. Surface runoff for the well site would typically travel to Lake Sakakawea via drainage patterns as follows:

- *Charging Eagle* – Runoff from the well pad would flow south into an unnamed coulee, then approximately 0.4 miles south to Hay Coulee. From there it would travel 3.1 miles south of Hans Creek and then west 1.1 miles to Wolf Chief Bay of Lake Sakakawea, for total traveled distance of 4.6 miles.

#### **3.4.1.1 Surface Water Impacts/Mitigation**

Alternative A (No Action) — Alternative A would not impact surface water.

Alternative B (Proposed Action) — No significant impacts to surface water are expected to result from Alternative B. The proposed project has been sited to avoid direct impacts to surface waters and to minimize the disruption of drainage patterns across the landscape. Construction site plans should contain measures, such as berming, to divert surface runoff around the well pad. In addition, the south side of the pad, the downslope side, will be bermed as an additional containment measures to prevent runoff of contaminated fluids from the pad to nearby drainageways. Roadway engineering and the implementation of BMPs to control erosion would minimize runoff of sediment downhill or downstream. Alternative B is not anticipated to result in measurable increases in runoff or impacts to surface waters.

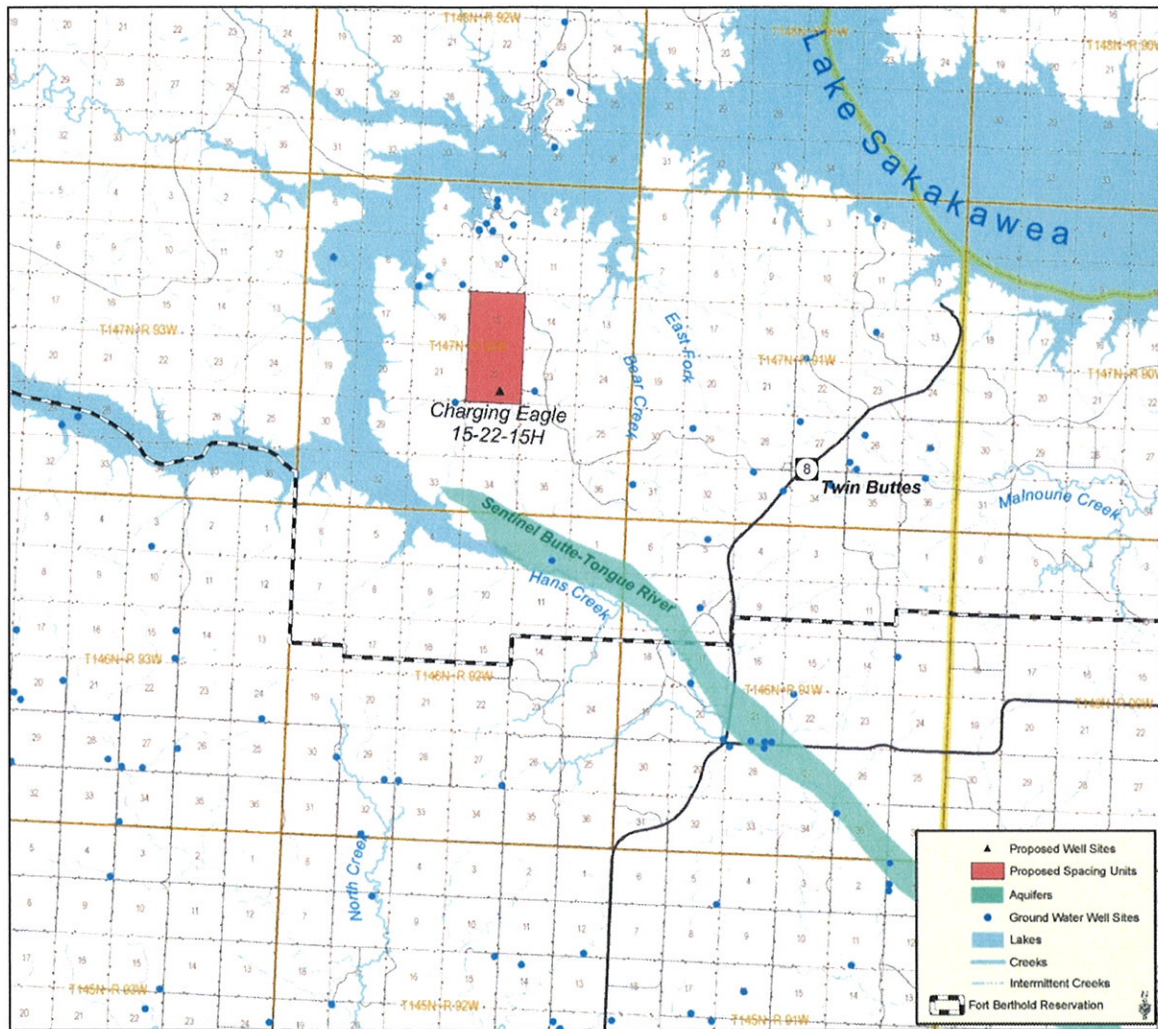
#### **3.4.2 Ground Water**

The North Dakota State Water Commission’s electronic records reveal that there is one permitted stock well within one-mile of the Charging Eagle well pad. There are no additional active or permitted water wells or ground water-fed surface water impoundments immediately within the proposed well pad or access road areas. The nearest aquifer to the proposed well pad is the Sentinel Butte-Tongue River aquifer, which is located south of the Charging Eagle well pad. No sole source aquifers have been identified within the state of North Dakota. *Please refer to Figure 3-3, Aquifers and Ground Water Wells.*

#### **3.4.2.1 Ground Water Impacts/Mitigation**

Alternative A (No Action) — Alternative A would not impact ground water.

Alternative B (Proposed Action) — No significant impacts to ground water are expected to result from Alternative B. No aquifers or groundwater wells are located within the proposed spacing units. As required by applicable law, the proposed well would be cemented and cased to isolate aquifers from potentially productive hydrocarbon and disposal/injection zones. In addition, reserve pits would be located away from areas of shallow ground water and have a synthetic liner to prevent potential leaks.



**Figure 3-3, Aquifers and Ground Water Wells**

### 3.5 Air Quality

The Clean Air Act, as amended, requires the EPA (Environmental Protection Agency) to establish air quality standards for pollutants considered harmful to public health and the environment by setting limits on emission levels of various types of air pollutants.

The NDDH (North Dakota Department of Health) operates a network of AAQM (Ambient Air Quality Monitoring) stations. The AAQM station in Dunn Center, North Dakota is 16.4 miles southwest of the Charging Eagle well site. Criteria pollutants tracked under EPA’s National Ambient Air Quality Standards in the Clean Air Act include SO<sub>2</sub> (sulfur dioxide), PM (particulate matter), NO<sub>2</sub> (nitrogen dioxide), O<sub>3</sub> (ozone), Pb (lead), and CO (carbon monoxide). In addition, the NDDH has established state air quality standards. State standards must be as stringent as (but may be more stringent than) federal standards. The federal and state air quality standards for these pollutants, and current air quality data for Dunn County, are summarized in **Table 3.3, Federal and State Air Quality Standards and County Data (EPA 2006, NDDH 2009)**.

North Dakota was one of thirteen states in 2008 that met standards for all criteria pollutants. The state also met standards for fine particulates and the eight-hour ozone standards established by the EPA



(NDDH 2009). In addition, monitoring data for Dunn County shows that it is currently well within air quality standards.

Pollutant	Averaging Period	EPA Air Quality Standard <sup>3</sup>	NDDH Air Quality Standard	Dunn County Air Quality Data
SO <sub>2</sub>	24-Hour	0.14 ppm	0.099 ppm	0.003 ppm
	Annual Mean	0.030 ppm	0.023 ppm	0.000 ppm
PM <sub>10</sub>	24-Hour	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	53 µg/m <sup>3</sup>
	Annual Mean	50 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
PM <sub>2.5</sub>	24-Hour	35 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>	—
	Weighted Annual Mean	15 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	—
NO <sub>2</sub>	Annual Mean	0.053 ppm	0.053 ppm	0.002 ppm
CO	1-Hour	35 ppm	35 ppm	—
	8-Hour	9 ppm	9 ppm	—
Pb	3-Month	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>	—
O <sub>3</sub>	1-Hour	0.12 ppm	0.12 ppm	0.065 ppm
	8-Hour	0.08 ppm	0.08 ppm	0.060 ppm

In addition, the Fort Berthold Reservation complies with the North Dakota National Ambient Air Quality Standards and visibility protection. The Clean Air Act affords additional air quality protection near Class I areas. Class I areas include national parks greater than 6,000 acres in size, national monuments, national seashores, and federally designated wilderness areas larger than 5,000 acres designated prior to 1977. There are no Federal Class I areas<sup>4</sup> within the project area. The Theodore Roosevelt National Park is the nearest Class I area, located approximately 40 miles west of the Charging Eagle well.

### 3.5.1 Air Quality Impacts/Mitigation

Alternative A (No Action) — Alternative A would not impact air quality.

Alternative B (Proposed Action) — The Fort Berthold Reservation complies with North Dakota National Ambient Air Quality Standards and visibility protection. Alternative B would not include any major sources of air pollutants. Construction of the project would result in temporary dust generation and minor gaseous emissions of PM, SO<sub>2</sub>, NO<sub>2</sub>, CO, and volatile organic compounds, as well as permanent emissions associated with gas flaring and truck traffic to and from the sites. Emissions would be limited to the immediate project areas and are not anticipated to cause or contribute to a violation of National Ambient Air Quality Standards. No detectable or long-term impacts to air quality or visibility are expected within the airsheds of the Fort Berthold Reservation, state, or Theodore Roosevelt National Park. No mitigation or monitoring measures are recommended.

<sup>3</sup> Emissions for SO<sub>2</sub>, NO<sub>2</sub>, CO, and O<sub>3</sub> are measured in ppm (parts per million) while Pb and PM emissions are measured in µg/m<sup>3</sup> (microgram per cubic meter).

<sup>4</sup> Federal Class I areas are generally national parks and wilderness areas.

### 3.6 Threatened and Endangered Species

In accordance with Section 7 of the Endangered Species Act of 1973, 50 CFR Part 402 as amended, each federal agency is required to ensure the following two criteria. First, any action funded or carried out by such agency must not be likely to jeopardize the continued existence of any federally-listed endangered or threatened species or species proposed to be listed. Second, no such action can result in the destruction or adverse modification of habitat of such species that is determined to be critical by the Secretary. An endangered species is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. A candidate species is one which may warrant listing as an endangered or threatened species, but the data are inconclusive. While candidate species are not legally protected under the Endangered Species Act, it is within the spirit of the Endangered Species Act to consider these species as having significant value and worth protecting.

The proposed action area was evaluated to determine the potential for occurrences of federally-listed threatened, endangered, and candidate species. The USFWS (United States Fish and Wildlife Service) has identified the black-footed ferret, gray wolf, interior least tern, pallid sturgeon, and whooping crane as endangered species that may be found within Dunn County. The threatened piping plover and candidate Dakota skipper are also listed for Dunn County. In addition, Dunn County contains designated critical habitat for the piping plover adjacent to Lake Sakakawea. In addition, the USFWS is currently conducting a study to determine if the Sprague's pipet will become a listed species in the future. None of these species were observed in the field. Habitat requirements, the potential for suitable habitat within the project areas, and other information regarding listed species for Dunn County are as follows:

#### **Black-footed Ferret (*Mustela nigripes*)**

The black-footed ferret historically could be found throughout the Rocky Mountains and Great Plains. In North Dakota, the black-footed ferret may potentially be present in prairie dog towns. However, they have not been confirmed in North Dakota for over 20 years and are presumed extirpated. Their preferred habitat includes areas around prairie dog towns, as they rely on prairie dogs for food and live in prairie dog burrows. Black-footed ferrets require at least an 80-acre prairie dog town to survive. No prairie dog towns were observed within the proposed well pads or access road corridors.

#### **Gray Wolf (*Canis lupus*)**

The gray wolf is the largest wild canine species in North America. It is found throughout northern Canada, Alaska, and the forested areas of Northern Michigan, Minnesota, and Wisconsin and has been re-introduced to Yellowstone National Park in Wyoming. While the gray wolf is not common in North Dakota, occasionally individual wolves do pass through the state. Historically, its preferred habitat includes biomes such as boreal forest, temperate deciduous forest, and temperate grassland. Gray wolves live in packs of up to 21 members, although some individuals will roam alone. The proposed project areas are located far from other known wolf populations and do not contain preferred habitat for suitable prey to sustain a population.

#### **Interior Least Tern (*Sterna antillarum*)**

The interior least tern nests along inland rivers rather than along the coast. The interior least tern is found in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande Rivers. In North Dakota, it is sighted along the Missouri River during the summer nesting season. The interior least tern nests in sandbars or barren beaches, preferably in the middle of a river for increased safety while nesting. These birds nest close together, using safety in numbers to scare away predators.

There is no existing or potential habitat within or near the project areas. Lake Sakakawea and the Little Missouri River are located outside of the project areas at least 2.3 miles away at the closest point to the project areas.

#### **Pallid Sturgeon (*Scaphirhynchus albus*)**

The pallid sturgeon is known to exist in the Yellowstone, Missouri, middle and lower Mississippi, and Atchafalaya Rivers, and seasonally in some tributaries. In North Dakota, the pallid sturgeon is found principally in the Missouri River and upstream of Lake Sakakawea in the Yellowstone River. Dating to prehistoric times, the pallid sturgeon has become well adapted to living close to the bottom of silty river systems. According to the USFWS, its preferred habitat includes "a diversity of water depths and velocities formed by braided river channels, sand bars, sand flats, and gravel bars." Weighing up to 80 pounds, pallid sturgeons are long lived, with individuals possibly reaching 50 years of age.

There is no existing or potential habitat within or near the project areas. Habitat where the pallid sturgeon may occur, such as Lake Sakakawea, is located at least 2.3 miles away at its nearest point to the project areas.

#### **Whooping Crane (*Grus americana*)**

The whooping crane is the tallest bird in North America. In the United States, this species ranges through the Midwest and Rocky Mountain regions from North Dakota south to Texas and east into Colorado. Whooping cranes migrate through North Dakota along a band running from the south central to the northwest parts of the state. They use shallow, seasonally and semi-permanently flooded palustrine (marshy) wetlands for roosting and various cropland and emergent wetlands for feeding. During migration, whooping cranes are often recorded in riverine habitats, including the Missouri River. Currently there are three wild populations of whooping cranes, yielding a total species population of about 365. Of these flocks, only one is self-sustaining.

The proposed project is located in the Central Flyway where 75 percent of confirmed whooping crane sightings have occurred. However, there is no existing or potential stopover habitat within or near the project areas. Lake Sakakawea and the Little Missouri River are located outside of the project areas at least 2.3 miles away at the closest point to the project areas.

#### **Piping Plover (*Charadrius meoldus*)**

The piping plover is a small migratory shorebird. Historically, piping plovers could be found throughout the Atlantic Coast, Northern Great Plains, and the Great Lakes. Drastically reduced, sparse populations presently occur throughout this historic range. In North Dakota, breeding and nesting sites can be found along the Missouri River. Preferred habitat for the piping plover includes riverine sandbars, gravel beaches, alkali areas of wetlands, and flat, sandy beaches with little vegetation. The USFWS has identified critical habitat for the piping plover on the Missouri River system. Critical habitat includes reservoir reaches composed of sparsely vegetated shoreline beaches, peninsulas, islands composed of sand, gravel, or shale, and their interface with water bodies.

There is no existing or potential habitat within or near the project areas. Critical habitat for the piping plover along Lake Sakakawea is located at least 2.3 miles away at its nearest point to the project areas.

#### **Dakota Skipper (*Hesperia dacotae*)**

The Dakota skipper is a small butterfly with a one-inch wing span. These butterflies historically ranged from southern Saskatchewan, across the Dakotas and Minnesota, to Iowa and Illinois. The preferred

habitat for the Dakota skipper consists of flat, moist bluestem prairies and upland prairies with an abundance of wildflowers.

The proposed project areas do consist of upland prairies; however, the sites lack an abundance of wildflowers such as pale purple and blanketflower for the Dakota skipper. Additionally, the project areas have been grazed and disturbed by human activity and, therefore, it is unlikely that the sites contain the high quality prairie necessary for Dakota skipper.

#### **Sprague's Pipit (*Anthus spragueii*)**

The Sprague's pipit is a small songbird found in prairie areas throughout the Northern Great Plains. Preferred habitat includes rolling, upland mixed-grass prairie habitat with high plant species diversity. The Sprague's pipit breeds in habitat with minimal human disturbance. The proposed project area does consist of upland prairie, which may provide potential habitat for the Sprague's pipit. Due to the presence of potential habitat for the Sprague's pipit within the project area, the proposed action may impact individuals or habitat. An "effect determination" under Section 7 of the Endangered Species Act has not been made due to the current unlisted status of the species.

### **3.6.1 Threatened and Endangered Species Impacts/Mitigation**

Alternative A (No Action) — Alternative A would not impact threatened or endangered species or designated critical habitat.

Alternative B (Proposed Action) — Due to a lack of potential habitat and species observances within the project areas, the proposed project may affect, but is unlikely to adversely affect, any of the listed species. The proposed project is not likely to jeopardize the continued existence of these species and is not likely to destroy or adversely modify critical habitat.

The proposed project is located within the Central Flyway where 75 percent of confirmed whooping crane sightings have occurred. Per USFWS recommendations, if a whooping crane is sighted within one-mile of a well site or associated facilities while under construction, then all work would cease within one-mile of that part of the project and the USFWS would be contacted immediately. In coordination with USFWS, work may resume after the bird(s) leave the area.

### **3.7 Wetlands, Eagles, Migratory Birds and Other Wildlife, and Vegetation**

Biological and botanical surveys at the site were conducted by Kadrmas, Lee & Jackson on October 22, 2009. The purpose of these surveys was to gather site-specific data regarding biological, botanical, soil, and water resources. The study area at each well site consisted of a 10-acre area centered around the well pad center stake and a 200-foot wide access road corridor. In addition, a survey for eagles and eagle nests within 0.5 miles of project disturbance areas was conducted by Kadrmas, Lee & Jackson on August 23, 2010. This survey consisted of pedestrian transects focusing specifically on potential nesting sites within 0.5 miles of project disturbance areas, including cliffs and wooded draws. Wooded draws were observed from the upland areas overlooking the draws and from bottomlands within the actual draws. Data gathered from these surveys, as well as from the USFWS, North Dakota Parks and Recreation Department, and North Dakota Game and Fish Department, are summarized below. The Three Affiliated Tribes Game and Fish Department was also contacted as part of the scoping process. No response was received.

The BIA EA onsite assessment was conducted concurrent to the biological and botanical surveys on October 22, 2009. Representatives from the Tribal Historic Preservation Office, BIA (Environmental

Protection Specialist), Kodiak, and Kadrmas, Lee & Jackson participated in the assessment. The proposed well pad location was adjusted as appropriate to best avoid impacts to environmental areas of concern, including avian, nests, wetlands, and any additional identified sensitive wildlife or botanical concerns identified onsite. Those present at the onsite assessment agreed on the selected location and best management practices to be implemented to minimize impacts to wildlife and botanical resources. During this site visit, the well pad and access road locations were finalized and the BIA gathered information needed to develop site-specific mitigation measures and BMPs to be incorporated into the final APD.

### **3.7.1 Wetlands**

Wetlands are defined in both the 1997 Executive Order 11990, Protection of Wetlands, and in Section 404 of the Clean Water Act of 1986, as those areas that are inundated by surface or groundwater with a frequency to support and under normal circumstances do or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Three parameters that define a wetland, as outlined in the Federal Manual for Delineating Jurisdictional Wetlands (US Army Corps of Engineers, 1987) are hydric soils, hydrophytic vegetation, and hydrology. Wetlands are an important natural resource serving many functions, such as providing habitat for wildlife, storing floodwaters, recharging groundwater, and improving water quality through purification.

No wetlands or riparian areas were identified within the proposed well pad or access road areas during the field survey.

#### **3.7.1.1 Wetland Impacts/Mitigation**

Alternative A (No Action) — Alternative A would not impact wetlands.

Alternative B (Proposed Action) — Due to the absence of wetlands within the proposed project areas, Alternative B would not impact wetlands.

### **3.7.2 Bald and Golden Eagles**

Protection is provided for the bald and golden eagle through the BGEPA (Bald and Golden Eagle Protection Act). The BGEPA of 1940, 16 U.S.C. 668–668d, as amended, was written with the intent to protect and preserve bald and golden eagles, both of which are treated as species of concern within the Department of the Interior. The BGEPA affords additional protection to all bald and golden eagles. Under the BGEPA, to “take” includes to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb, wherein “disturb” means to agitate or bother a bald or golden eagle to the degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, causing injury, death, or nest abandonment.

The bald eagle (*Haliaeetus leucocephalus*) is sighted in North Dakota along the Missouri River during spring and fall migration periods and periodically in other places in the state such as the Devils Lake and Red River areas. In addition, the ND Game and Fish Department estimated in 2009 that 66 nests were occupied by bald eagles, though not all eagle nests were visited and verified<sup>5</sup>. Preferred habitat for the bald eagle includes open areas, forests, rivers, and large lakes. Bald eagles tend to use the same nest

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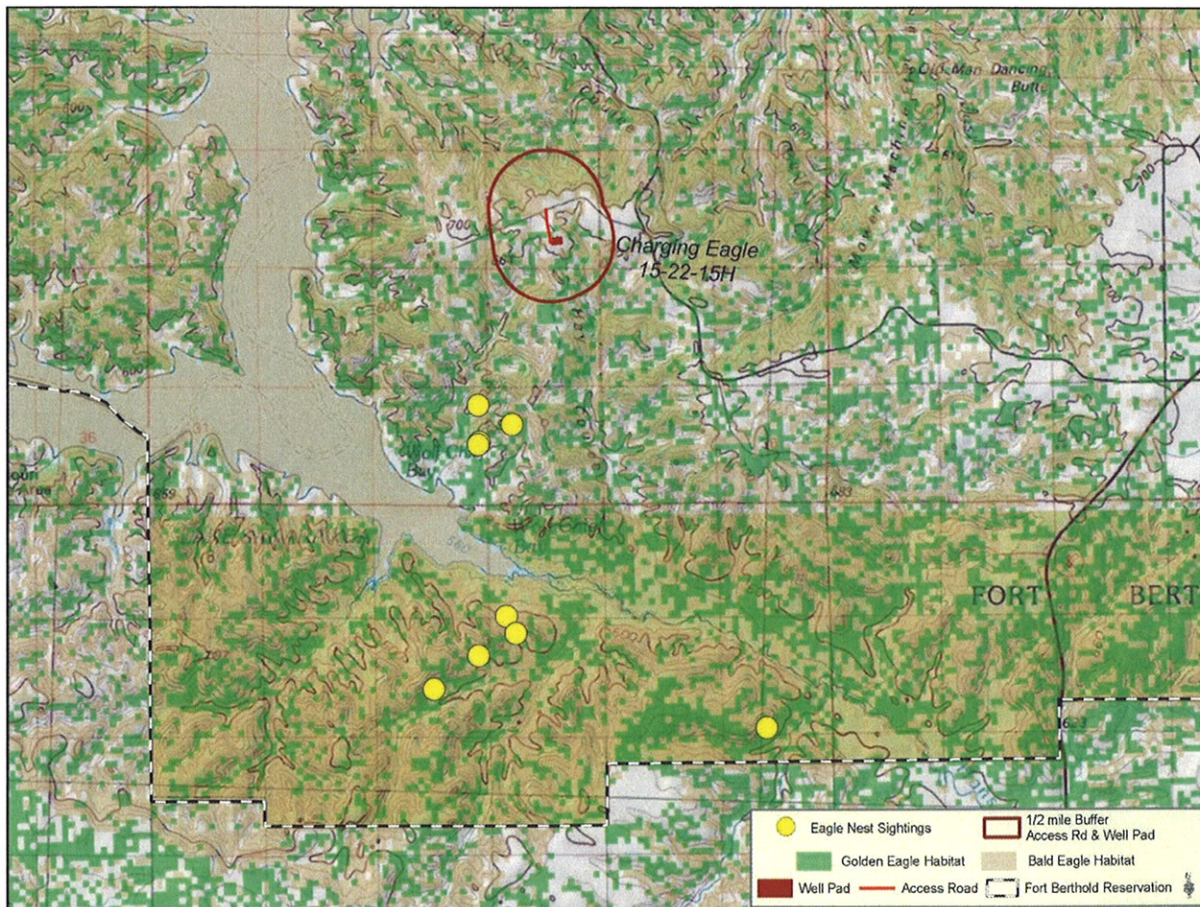
<sup>5</sup> Source: “Nesting in Numbers.” ND Outdoors February 2010 issue.



year after year, building atop the previous year's nest. No bald eagles or nests were observed within 0.5 miles of proposed project disturbance areas during the field survey conducted on August 23, 2010.

The golden eagle (*Aquila chrysaetos*) can be spotted in North Dakota throughout the badlands and along the upper reaches of the Missouri River in the western part of the state. Golden eagle pairs maintain territories that can be as large as 60 square miles and nest in high places including cliffs, trees, and human-made structures. They perch on ledges and rocky outcrops and use soaring to search for prey. Golden eagle preferred habitat includes open prairie, plains, and forested areas. No golden eagles or nests were observed within 0.5 miles of proposed project disturbance areas during the field survey conducted on August 23, 2010.

The USGS (United States Geological Survey) Northern Prairie Wildlife Research Center maintains information on bald and golden eagle habitat within the state of North Dakota. According to the USGS data, the 0.5 mile buffered survey area for the proposed well site does contain recorded habitat for both the bald and golden eagle. In addition, Dr. Anne Marguerite Coyle of Dickinson State University has completed focused research on golden eagles and maintains a database of golden eagle nest sightings. According to Dr. Coyle's information, the closest recorded golden eagle nest is located approximately 1.5 miles southwest of the proposed Charging Eagle site. **Please refer to Figure 3-4, Bald and Golden Eagle Habitat and Nest Sightings.**



**Figure 3-4, Bald and Golden Eagle Habitat and Nest Sightings**

### 3.7.2.1 Bald and Golden Eagle Impacts/Mitigation

Alternative A (No Action) – Alternative A would not impact bald or golden eagles.

Alternative B (Proposed Action) – No golden or bald eagles were observed during the field investigations and no evidence of eagle nests was found within 0.5 miles of the project areas. If a bald or golden eagle or eagle nest is sighted within 0.5 miles of the project construction area, construction activities shall cease and the USFWS shall be notified for advice on how to proceed.

### 3.7.3 Migratory Birds and Other Wildlife

The MBTA (Migratory Bird Treaty Act), 916 U.S.C. 703-711, provides protection for 1,007 migratory bird species, 58 of which are legally hunted. The MBTA regulates impacts to these species such as direct mortality, habitat degradation, and/or displacement of individual birds. The MBTA defines “taking” to include by any means or in any manner, any attempt such as hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof, except when specifically permitted by regulations.

The proposed project study area list in the prairie pothole region of North Dakota and the Central Flyway of North America. As such, this area is used as resting grounds for many birds in their spring and fall migrations, as well as nesting and breeding grounds for many waterfowl species. Other non-game bird species are also known to fly through and inhabit this region. In addition, the project area contains suitable habitat for mule deer (*Odocoileus hemionus*), whitetail deer (*Odocoileus virginianus*), Eastern cottontail rabbit (*Sylvilagus transitionalis*), ring-necked pheasant (*Phasianus colchicas*), sharp-tail grouse (*Tympanuchus phasianellus*), wild turkey (*Meleagris gallopavo*), American badger (*Taxidea taxus*), red fox (*Vulpes vulpes*), coyote (*Canis latrans*), mountain lion (*Puma concolor*), North American porcupine (*Erethizon dorsatum*), song birds, bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), and American kestrel (*Falco sparverius*).

During the pedestrian field survey, migratory birds, raptors, big and small game species, non-game species, potential wildlife habitats, and/or nests were identified if present. No wildlife or wildlife indicators were observed during the field survey.

#### 3.7.3.1 Migratory Birds and Other Wildlife Impacts/Mitigation

Alternative A (No Action) — Alternative A would not impact migratory birds or other wildlife.

Alternative B (Proposed Action) — Due to the presence of suitable habitat at the Charging Eagle site for many wildlife and avian species, ground clearing activities associated with the proposed project may impact individuals or suitable habitat for the wildlife species discussed above. No migratory bird nests are expected to be impacted by construction of the proposed project as site construction would begin after July 15, and would therefore avoid the migratory bird nesting and breeding season (generally February 1 through July 15). The proposed project may affect individual wildlife species, but is not likely to adversely affect populations to result in a trend towards listing of the species. As no grouse leks were observed in project areas, timing restrictions for construction are not required.

The proposed Charging Eagle well is located on upland areas that are at a considerably higher elevation than the Lake Sakakawea shoreline, located approximately 2.3 miles away. This distance, along with the



topographic features of the area, should assist in providing sight and sound buffers for shoreline-nesting birds.

During drilling activities, the noise, motion, and lighting associated with having a drilling rig on site are anticipated to deter any wildlife from entering the area. In addition, the reserve pit would be used primarily for solid material storage, and it is expected that very minimal free fluid will be present in the pit. The absence of exposed liquids in the pit would minimize its attractiveness to wildlife. Immediately after the drilling rig leaves the location, reserve pits would be netted with State and Federal approved nets. These would remain in place until closure of the reserve pits.

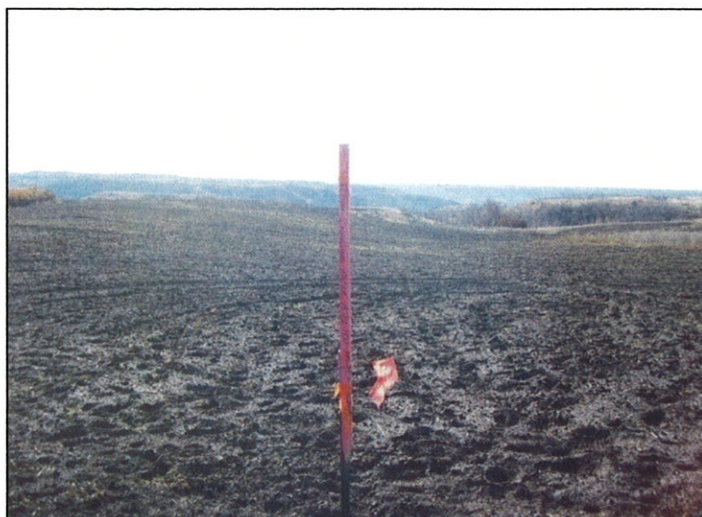
In addition, design considerations will be implemented to further protect against potential habitat degradation. The storage tanks and heater/treater would be surrounded by an impermeable berm that would act as secondary containment to guard against possible spills. The berm would be sized to hold 100% of the capacity of the largest storage tank plus one full day's production. BMPs to minimize wind and water erosion of soil resources, as well as implementing a semi-closed loop system during drilling would also be put into practice.

No construction will take place between February 1 and July 15 in order to avoid impacts to migratory birds during the breeding/nesting season. Additionally, all reasonable, prudent, and effective measures to avoid the taking of migratory bird species would be implemented during the construction and operation phases. These measures would include: the use of suitable mufflers on all internal combustion engines; certain compressor components to mitigate noise; only utilizing approved roadways; placing mesh or grate covers over barrels or buckets placed under valves and spigots to collect drilled oil; maintaining open pits and ponds that are free from oil; and netting cuttings pits with netting that has a maximum mesh size of 1.5 inches.

#### 3.7.4 Vegetation

Botanical resources were evaluated using visual inspection. The project areas were also investigated for the presence of invasive plant species.

The project areas consisted of numerous vegetative communities, due to the wide variation of ecological communities found in the region. The local topography found within and adjacent to the project areas strongly influenced the types of vegetation found on site. The Charging Eagle well site and access road consisted of a plowed field surrounded by upland, mixed-grass prairie and a few wooded draws. *Please refer to Figure 3-5, Charging Eagle Site Vegetation.*



*Figure 3-5, Charging Eagle Site Vegetation*





**Figure 3-6, Wooded Draw Example**

The mixed-grass prairie consisted mainly of green needlegrass (*Stipa viridula*), Western wheatgrass (*Pascopyrum smithii*) and blue grama (*Bouteloua gracilis*) with intermixed patches dominated by Western snowberry (*Symphoricarpos occidentalis*), little bluestem (*Andropogon scoparius*), and purple coneflower (*Echinacea angustifolia*). Wooded draws predominantly consisted of green ash (*Fraxinus pennsylvanica*), chokecherry (*Prunus virginiana*), cottonwood (*Populus deltoids*), and silver buffalo berry (*Shepherdia argentea*). **Please refer to Figure 3-6, Wooded Draw Example.**

In addition, the project areas were surveyed for the presence of noxious weeds. Of the 11 species declared noxious under the North Dakota Century Code (Chapter 63-01.0), three are known to occur in Dunn County. **Please refer to Table 3.4, Noxious Weed Species.** In addition, counties and cities have the option to add species to the list to be enforced only in their jurisdiction. Dunn County has not listed additional species.

<b>Common Name</b>	<b>Scientific Name</b>	<b>Dunn County Acres</b>
Absinth wormwood	<i>Artemisia abinthium</i> L.	39,300
Canada thistle	<i>Cirsium arvense</i> (L.) Scop	28,500
Dalmation toadflax	<i>Linaria genistifolia</i> ssp. <i>Dalmatica</i>	--
Diffuse knapweed	<i>Centaurea diffusa</i> Lam	--
Leafy spurge	<i>Euphorbia esula</i> L.	18,300
Musk thistle	<i>Carduus nutans</i> L.	--
Purple loosestrife	<i>Lythrum salicaria</i>	—
Russian knapweed	<i>Acroptilon repens</i> (L.) DC.	—
Saltcedar (tamarisk)	<i>Tamarix ramosissima</i>	—
Spotted knapweed	<i>Centaurea maculosa</i> Lam.	—
Yellow starthistle	<i>Centaurea solstitialis</i> L.	—

Canada thistle and field bindweed were located in small patches throughout the agriculturally plowed portion of the Charging Eagle site. These species were also located in small quantities along the fringes of the wooded draws, as was one small patch of absinth wormwood.

#### **3.7.4.1 Vegetation Impacts/Mitigation**

Alternative A (No Action) — Alternative A would not impact vegetation.

Alternative B (Proposed Action) — Ground clearing activities associated with construction of the proposed well and access road would result in vegetation disturbance. However, the areas of proposed

surface disturbances are minimal in the context of the setting, and these impacts would be further minimized in accord with the Gold Book and other requirements. Following construction, disturbed vegetation would be reseeded in-kind following construction activities, and a noxious weed management plan would be implemented to prevent the spread of noxious weeds and non-native species.

### 3.8 Cultural Resources

Historic properties, or cultural resources, on federal or tribal lands are protected by many laws, regulations and agreements. The *National Historic Preservation Act of 1966* (16 USC 470 *et seq.*) at Section 106 requires, for any federal, federally assisted or federally licensed undertaking, that the federal agency take into account the effect of that undertaking on any district, site, building, structure or object that is included in the National Register of Historic Places (National Register) before the expenditure of any federal funds or the issuance of any federal license. Cultural resources is a broad term encompassing sites, objects, or practices of archaeological, historical, cultural and religious significance. Eligibility criteria (36 CFR 60.6) include association with important events or people in our history, distinctive construction or artistic characteristics, and either a record of yielding or a potential to yield information important in prehistory or history. In practice, properties are generally not eligible for listing on the National Register if they lack diagnostic artifacts, subsurface remains or structural features, but those considered eligible are treated as though they were listed on the National Register, even when no formal nomination has been filed. This process of taking into account an undertaking's effect on historic properties is known as "Section 106 review," or more commonly as a cultural resource inventory.

The area of potential effect (APE) of any federal undertaking must also be evaluated for significance to Native Americans from a cultural and religious standpoint. Sites and practices may be eligible for protection under the *American Indian Religious Freedom Act of 1978* (42 USC 1996). Sacred sites may be identified by a tribe or an authoritative individual (Executive Order 13007). Special protections are afforded to human remains, funerary objects, and objects of cultural patrimony under the *Native American Graves Protection and Repatriation Act* (NAGPRA, 25 USC 3001 *et seq.*).

Whatever the nature of the cultural resource addressed by a particular statute or tradition, implementing procedures invariably include consultation requirements at various stages of a federal undertaking. The MHA Nation has designated a Tribal Historic Preservation Officer (THPO) by Tribal Council resolution, whose office and functions are certified by the National Park Service. The THPO operates with the same authority exercised in most of the rest of North Dakota by the State Historic Preservation Officer (SHPO). Thus, BIA consults and corresponds with the THPO regarding cultural resources on all projects proposed within the exterior boundaries of the Fort Berthold Reservation.

In accordance with 16 U.S.C. 470hh(a), information concerning the nature and location of archaeological resources and traditional cultural properties, and detailed information regarding archaeological and cultural resources, is confidential. Such information is exempt from the Freedom of Information Act and is not included in this EA.

A Class I Literature Review was conducted in by Kadrmas, Lee & Jackson on August 19, 2009. The Class I Literature Review revealed that no previous inventories have been conducted within one mile of the Charging Eagle site. Following the Class I Literature Review, a Class III Cultural Resources Inventory was conducted on October 22, 2009. Approximately 14 acres were intensively inventoried during the October 2009 survey. A Traditional Cultural Property Survey was also conducted at that time by the Three Affiliated Tribes THPO (Tribal Historic Preservation Office). The APE (Area of Potential Effect), or

area surveyed, consisted of a 10-acre site around the well site, as well as 150-foot wide access road corridors. Findings of the Class III Cultural Resources Inventories and Traditional Cultural Property Surveys are maintained on file at the BIA.

No historic properties were located that appear to possess the quality of integrity and meet at least one of the criteria (36 CFR 60.6) for inclusion on the National Register. As the lead federal agency, and as provided for in 36 CFR 800.5, on the basis of the information provided, BIA reached a determination of **no historic properties affected** for this undertaking. This determination was communicated to the THPO on February 12, 2010; however, no response was received from the THPO within the allotted 30-day comment period.

### 3.8.1 Cultural Resources Impacts/Mitigation

Alternative A (No Action) — Alternative A would not impact cultural resources.

Alternative B (Proposed Action) — The proposed well site and access road have been positioned to avoid impacts to cultural resources. As such, cultural resources impacts are not anticipated. If cultural resources are discovered during construction or operation, work shall immediately be stopped, the affected site secured, and BIA and THPO notified. In the event of a discovery, work shall not resume until written authorization to proceed has been received from the BIA. All project workers are prohibited from collecting artifacts or disturbing cultural resources in any area under any circumstances.

### 3.9 Socioeconomic Conditions

Socioeconomic conditions depend on the character, habits, and economic conditions of people living within the proposed project area. The proposed action's effects on businesses, employment, transportation, utilities, etc., are factors that affect the social climate of a community. Other factors that distinguish the social habits of one particular area from another include the geography, geology, and climate of the area.

The Fort Berthold Reservation and Dunn County have lower than statewide averages of per capita income and median household income. In addition, they have higher rates of unemployment and individuals living below poverty level than the state. *Please refer to Table 3.5, Employment and Income.*

Location	Per Capita Income	Median Household Income	Unemployment Rate	Individuals Living Below Poverty Level
Dunn County	\$14,642	\$30,015	6.4%	17.5%
Fort Berthold Reservation	\$10,291	\$26,274	11.1%	28.1%
<b>Statewide</b>	<b>\$17,769</b>	<b>\$34,604</b>	<b>4.6%</b>	<b>11.9%</b>

Source: U.S. Census Bureau of the Census, Census 2000.

Population decline in rural areas of North Dakota has been a growing trend as individuals move toward metropolitan areas of the state, such as Bismarck and Fargo. While Dunn County's population has been slowly declining, the Fort Berthold Reservation has experienced a steady increase in population. American Indians are the majority population on the Fort Berthold Reservation but are the minority

population in Dunn County and the state of North Dakota. *Please refer to Table 3.6, Demographic Trends.*

<b>Location</b>	<b>Population in 2000</b>	<b>% of State Population</b>	<b>% Change 1990–2000</b>	<b>Predominant Race</b>	<b>Predominant Minority</b>
Mountrail County	6,631	1.03%	-5.6%	White	American Indian (30%)
Dunn County	3,600	0.56%	-10.1%	White	American Indian (12%)
Fort Berthold Reservation	5,915	0.92%	+9.8%	American Indian <sup>6</sup>	White (26.9%)
<b>Statewide</b>	<b>642,200</b>	<b>--</b>	<b>+0.5%</b>	<b>White</b>	<b>American Indian (5%)</b>

Source: U.S. Census Bureau of the Census, Census 2000.

### **3.9.1 Socioeconomic Impacts/Mitigation**

Alternative A (No Action) — Alternative A would not impact the socioeconomic conditions in the project areas. However, Alternative A would not permit the development of oil and gas resources, which could have positive effects on employment and income through the creation of jobs and payment of leases, easement, and/or royalties to Tribal members.

Alternative B (Proposed Action) — Alternative B is not anticipated to substantially impact the socioeconomic conditions in the project areas, but it does have the potential to yield beneficial impacts on Tribal employment and income. The Three Affiliated Tribes and allotted owners of mineral interests may receive income from oil and gas development on the Fort Berthold Reservation in the form of royalties, if drilling and production are successful, as well as from TERO (Tribal Employee Rights Office) taxes on construction of drilling facilities. Moreover, qualified individual tribal members may find employment through oil and gas development and increase their individual incomes. Employment opportunities related to oil and gas development may lessen the unemployment rate and increase income levels on the Fort Berthold Reservation. Additionally, the proposed action may result in indirect economic benefits to tribal business owners resulting from construction workers expending money on food, lodging, and other necessities.

## **3.10 Environmental Justice**

Per Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, measures must be taken to avoid disproportionately high adverse impacts on minority or low-income communities. With 28% of its population living below the poverty line and the majority of its population of American Indian ancestry, the Fort Berthold Reservation contains both minority and low-income communities.

### **3.10.1 Environmental Justice Impacts/Mitigation**

Alternative A (No Action) — Alternative A would not result in disproportionate impacts to minority or low-income populations.

<sup>6</sup> According to the North Dakota Tourism Division, there are 10,400 enrolled members of the Three Affiliated Tribes.

Alternative B (Proposed Action) — Alternative B is not anticipated to result in disproportionately adverse impacts to minority or low-income populations. The proposed action would not require the relocation of homes or businesses, and no community disruptions are expected. Oil and gas leasing and exploration provide income to Tribal members who hold mineral interests, some of whom may benefit further from royalties on commercial production.

### **3.11 Infrastructure and Utilities**

The Fort Berthold Reservation's infrastructure consists of roads, bridges and access points, utilities, and facilities for water, wastewater, and solid waste. Known utilities and infrastructure within the vicinity of the proposed projects include both paved and gravel roadways as well as existing and proposed Fort Berthold Rural Water Development rural water distribution pipelines.

#### **3.11.1 Infrastructure and Utility Impacts/Mitigation**

Alternative A (No Action) — Alternative A would not impact infrastructure or utilities.

Alternative B (Proposed Action) — Alternative B would require improvements to existing roadways, as well as construction of new roadway segments. Kodiak will follow Dunn County and North Dakota Department of Transportation rules and regulations regarding rig moves and oversize/overweight loads on state and county roads used as haul roads. All contractors are required to permit their oversize/overweight loads through these entities. Kodiak's contractors will be required to adhere to all local, county, state, and BIA regulations and ordinances regarding rig moves, oversize/overweight loads, and frost restrictions

Construction of the proposed sites may encroach upon existing water distribution lines. Prior to construction, coordination would occur with the Fort Berthold Water Authority Director to ensure minimization of potential impacts to existing water distribution pipelines. Each well site may also require the installation of supporting electrical lines. Other utility modifications would be identified during design and coordinated with the appropriate utility company.

Drilling operations at the proposed well sites may generate produced water. In accordance with the BLM Gold Book and BLM Onshore Oil and Gas Order Number 7, produced water would be disposed of via subsurface injection, surface discharge, lined reserve pits, or other appropriate methods that would prevent spills or seepage. Produced water may be trucked to nearby oil fields where commercial injection wells are available. Disposal areas would be properly fenced to prevent human or animal access.

### **3.12 Public Health and Safety**

Health and safety concerns include hydrogen sulfide (H<sub>2</sub>S) gas<sup>7</sup>, hazardous materials used or generated during well installation or production, and traffic hazards associated with heavy drill rigs and tankers.

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<sup>7</sup> H<sub>2</sub>S is extremely toxic in concentrations above 500 parts per million. H<sub>2</sub>S has not been found in measurable quantities in the Bakken Formation. However, before reaching the Bakken, drilling would penetrate the Mission Canyon Formation, which is known to contain varying concentrations of H<sub>2</sub>S.



### 3.12.1 Public Health and Safety Impacts/Mitigation

Alternative A (No Action) — Alternative A would not impact public health and safety.

Alternative B (Proposed Action) — Project design and operational precautions would minimize the likelihood of impacts from H<sub>2</sub>S gases, hazardous materials, and traffic, as described below.

#### *H<sub>2</sub>S Gases*

It is unlikely that the proposed action would result in release of H<sub>2</sub>S at dangerous concentrations; however, Kodiak will prepare H<sub>2</sub>S Contingency Plans and submit them to the BLM as part of the APD. These plans establish safety measures to be implemented throughout the drilling process to prevent accidental release of H<sub>2</sub>S into the atmosphere. The Contingency Plans are designed to protect persons living and/or working within 3,000 feet of each well location and include emergency response procedures and safety precautions to minimize the potential for an H<sub>2</sub>S gas leak during drilling activities.

Satellite imagery did not reveal any residences within 3,000 feet of the proposed Charging Eagle site.

#### *Hazardous Materials*

The EPA (Environmental Protection Agency) specifies chemical reporting requirements under the Superfund Amendments and Reauthorization Act of 1986, as amended. No materials used or generated by this project for production, use, storage, transport, or disposal are on either the Superfund list or on the EPA's list of extremely hazardous substances in 40 CFR 355.

#### *Traffic*

Safety hazards posed from increased traffic during the drilling phase are anticipated to be short-term and minimal. It is anticipated that approximately 30 to 40 trips, over the course of several days, would be required to transport the drilling rig and associated equipment to each proposed well site. If commercial operations are established following drilling activities, the pump would be checked daily and oil and water hauling activities would commence. Oil would be hauled using a semi tanker trailer, typically capable of hauling 140 barrels of oil per load. Traffic to and from the well sites would depend upon the productivity of the well. A 1,000 barrel per day well would require approximately seven tanker visits per day, while a 300 barrel per day well would require approximately two visits per day.<sup>8</sup> Produced water would also be hauled from the site using a tanker, which would typically haul 110 barrels of water per load. The number of visits would be dependent upon daily water production.<sup>9</sup> Established load restrictions for state and BIA roadways would be followed and haul permits would be acquired as appropriate.

### 3.13 Cumulative Considerations

Cumulative impacts result from the incremental consequences of an action "when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). Effects of an action may be minor when evaluated in an individual context, but these effects can add to other disturbances and collectively may lead to a measureable environmental change. By evaluating the impacts of the proposed action with the effects of other

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<sup>8</sup> A typical Bakken oil well initially produces at a high rate and then declines rapidly over the next several months to a more moderate rate. In the vicinity of the proposed project areas, initial rates of 500 to 1,000 BOPD (barrels of oil per day) could be expected, dropping to 200 to 400 BOPD after several months.

<sup>9</sup> A typical Bakken oil well initially produces water at 200 bbls per day and then declines rapidly over the next several months to a more moderate rate. In the vicinity of the proposed project areas, initial rated of 200 BWP (barrels of water per day) could be expected, dropping to 30 to 70 BWP after several months.

actions, the relative contribution of the proposed action to a projected cumulative impact can be estimated.

### **3.13.1 Past, Present, and Reasonably Foreseeable Actions**

Oil and gas development in western North Dakota has occurred with varying intensity for the past 100 years. Gas development began in the area in 1909, and the first recorded oil well was drilled in 1920. North Dakota's oil production has boomed twice prior to the current boom; first in the 1950s, peaking in the 1960s, and again in the 1970s, peaking in the 1980s. North Dakota is currently experiencing its third oil boom, which has already far surpassed the previous booms in magnitude. This oil boom is occurring both within and outside the Fort Berthold Reservation.

According to the NDIC, as of June 20, 2010, there were approximately 316 active and/or proposed oil and gas wells within the Fort Berthold Reservation. *Please refer to Figure 3-11, Existing and Proposed Oil and Gas Wells.* One active and one proposed oil and gas well exists approximately 0.8 miles northeast of the Charging Eagle site. *Please refer to Table 3.7, Summary of Active and Proposed Wells.*





Distance from Sites	Number of Active or Proposed Wells
1 mile radius	2
5 mile radius	2
10 mile radius	32
20 mile radius	213

In addition to oil and gas activity within the project areas, the Bureau of Reclamation is in the process of expanding its water distribution system on the Fort Berthold Reservation and has identified existing and proposed water distribution lines in the vicinity of the proposed site.

As mentioned previously in this EA, the Bakken Formation (the target of the proposed action) covers approximately 25,000 square miles beneath North Dakota, Montana, Saskatchewan, and Manitoba, with approximately two-thirds of the acreage beneath North Dakota. The Three Forks Formation lies beneath the Bakken. The North Dakota Department of Mineral Resources estimates that there are approximately 2 billion barrels of recoverable oil in each of these Formations and that there will be 30-40 remaining years of production, or more if technology improves.

Commercial success at any new well can be reasonably expected to result in additional nearby oil/gas exploration proposals; however, it is speculative to anticipate the specific details of such proposals. While such developments remain speculative until APDs have been submitted to the BLM or BIA, it is reasonable to assume based on the estimated availability of the oil and gas resources that further development will continue in the area for the next 30-40 years. It is also reasonable to assume that natural gas and oil gathering and/or transportation systems will be proposed and likely built in the future to facilitate the movement of products to market. Currently, natural gas gathering systems are being considered and/or proposed on the Fort Berthold Reservation, but as there are no approved projects, that information remains proprietary.

### 3.13.2 Cumulative Impacts

The proposed project is not anticipated to directly impact other oil and gas projects or expansion of the Fort Berthold Rural Water System. It is a reasonable generalization that, while oil and gas development proposals and project vary based on the developer, well location, permit conditions, site constraints, and other factors, this proposed action is not unique among others of its kind. It is also a reasonable generalization based on regulatory oversight by the BIA, BLM, NDIC, and other agencies as appropriate, that this proposed action is not unique in its attempts to avoid, minimize, or mitigate harm to the environment through the use of BMPs and site-specific environmental commitments. The following discussion addresses potential cumulative environmental impacts associated with the proposed project and other past, present, and reasonably foreseeable actions.

**Geological Setting and Land Use** — As oil and gas exploration and the production of the Bakken and Three Forks formations proceed, lands atop these formations are converted from existing uses (often agricultural or vacant) to industrial, energy-producing uses. The proposed project would convert

grasslands and cultivated agricultural lands to a well pad, access road, and associated uses. However, the well pad and access road have been selected to avoid or minimize sensitive land uses and to maintain the minimum impact footprint possible. In addition, the BIA views these developments to be temporary in nature as impacted areas would be restored to original conditions upon completion of oil and gas activity. When added to existing and proposed water distribution lines and/or natural gas gathering systems, no cumulative impacts are anticipated as these lines have, or would, result in a temporary disturbance and would not permanently convert existing land uses.

**Air Quality** — Air emissions related to construction and operation of past, present, or reasonably foreseeable oil and gas wells when added to emissions resulting from the proposed project are anticipated to have a negligible cumulative impact to air quality. Dunn County is currently well below the Ambient Air Quality Standards and it is anticipated that mobile air source toxics from truck traffic for the proposed project and other projects, as well as air emissions related to gas flaring, would be minor; therefore, the contribution of the proposed project to air emissions is not expected to be significant.

**Wetlands, Wildlife, and Vegetation** — The proposed project, when added to previously constructed and reasonably foreseeable oil and gas wells, would contribute to habitat loss and fragmentation associated with construction of the well pad, access road, and associated development. The North Dakota Parks and Recreation Department notes in its undated publication “North Dakota Prairie: Our Natural Heritage” that approximately 80% of the state’s native prairie has been lost to agriculture, with most of the remaining areas found in the arid west; ongoing oil and gas activity has the potential to threaten remaining native prairie resources. However, the proposed action and other similar actions are carefully planned to avoid or minimize these impacts. Multiple components of the process used by the BIA to evaluate and approve such actions, including biological and botanical surveys, on-site assessments with representatives from multiple agencies and entities, public and agency appeal periods on this EA, and the use of BPMs and site-specific environmental commitments are in place to ensure that environmental impacts associated with oil and gas development are minimized. The practice of utilizing existing roadways to the greatest extent practicable further minimizes impacts to wildlife habitats and prairie ecosystems. The proposed well has also been sited to avoid sensitive areas such as surface water, wetlands, or riparian areas. In addition, the use of best management practices and continued reclamation are anticipated to minimize and mitigate disturbed habitat.

**Infrastructure and Utilities** — The proposed action, along with other oil and gas wells proposed and drilled in the Bakken and Three Forks formations, requires infrastructure and utilities to provide needed resource inputs and accommodate outputs such as fresh water, power, site access, transportation for products to market, and disposal for produced water and other waste materials. As with the proposed action, many other well sites currently being proposed and/or built are positioned to make the best use of existing roads and to minimize the construction of new roads; however, some length of new access roads are commonly associated with new wells. Well pads are positioned in close proximity to existing roadways whenever possible to minimize the extent of access road impacts in the immediate area. Additionally, existing two-track roadways have been utilized wherever possible to minimize impacts to the surrounding landscape. The contribution of the proposed project and other projects to stress on local roadways used for hauling materials may result in a cumulative impact to local roadways. However, abiding by permitting requirements and roadway restrictions with the jurisdictional entities are anticipated to offset any cumulative impact that may result from the proposed project and other past, present, or future projects.

The proposed action has been planned to avoid impacts to resources such as wetlands, floodplains, surface water, cultural resources, and threatened and endangered species. Unavoidable impacts to these or other resources would be minimized and/or mitigated in accordance with applicable regulations.

### **3.14 Irreversible and Irretrievable Commitment of Resources**

Removal and consumption of oil or gas from the Bakken Formation would be an irreversible and irretrievable commitment of resources. Other potential resource commitments include acreage devoted to disposal of cuttings, soil lost through wind and water erosion, cultural resources inadvertently destroyed, wildlife killed during earth-moving operations or in collisions with vehicles, and energy expended during construction and operation. None of these impacts are expected to be significant.

### **3.15 Short-term Use of the Environment Versus Long-term Productivity**

Short-term activities would not significantly detract from long-term productivity of the project area. The area dedicated to the access roads and well pads would be unavailable for livestock grazing, wildlife habitat, or other uses. However, allottees with surface rights would be compensated for loss of productive acreage and project footprints would shrink considerably once the wells were drilled and non-working areas reclaimed and reseeded. Successful and ongoing reclamation of the landscape would reestablish the land's use for wildlife and livestock grazing, stabilize the soil, and reduce the potential for erosion and sedimentation. The primary long-term resource loss would be the extraction of oil and gas resources from the Bakken Formation, which is the purpose of this project.

### **3.16 Permits**

The following permits or approvals will be obtained by Kodiak, prior to construction:

- *Application for Permit to Drill*—An APD will be submitted to the BLM. The APD will include this environmental document and additional information, including any other necessary federal, state, and tribal permits. The APD will be prepared and submitted according to BLM guidelines. BLM approval of the APD will be required prior to construction of the proposed exploratory wells.

### **3.17 Environmental Commitments/Mitigation**

The following commitments have been made by Kodiak:

- Topsoil would be segregated and stored on-site to be used in the reclamation process. All disturbed areas would be re-contoured to original elevations as close as possible as part of the reclamation process.
- Any woody vegetation cleared from the site would be chipped on-site and incorporated into topsoil stockpiles.
- BMPs (may include, but are not limited to, hydro-seeding, erosion mats, and biologs) will be implemented to minimize wind and water erosion of soil resources. Soil stockpiles will be positioned to help divert runoff around the well pad.
- Well site and access road will avoid surface waters. The proposed project will not alter stream channels or drainage patterns.



- The reserve pit would be located away from areas of shallow ground water and have a synthetic liner to prevent potential leaks. All spills or leaks of chemicals and other pollutants will be reported to the BLM and EPA. The procedures of the surface management agency shall be followed to contain leaks or spills.
- The proposed well will be cemented and cased to isolate aquifers from potentially productive hydrocarbon and disposal/injection zones.
- Wetlands and riparian areas will be avoided. In addition, the south side of the pad, the downslope side, will be bermed as an additional containment measure to prevent runoff of contaminated fluids from the pad to nearby drainageways.
- Disturbed vegetation would be re-seeded in kind upon completion of the project, and a noxious weed management plan would be implemented. The re-seeded site would be maintained until such time that the vegetation is consistent with surrounding undisturbed areas and the site is free of noxious weeds. Seed will be obtained from a BIA/BLM approved source.
- Well sites and access roads will avoid impacts to cultural resources. If cultural resources are discovered during construction or operation, work shall immediately be stopped, the affected site secured, and BIA and THPO notified. In the event of a discovery, work shall not resume until written authorization to proceed has been received from the BIA.
- Access roads would be located at least 70 feet away from identified cultural resources. The boundaries of these 70-foot "exclusion zones" would be pin-flagged as an extra measure to ensure that inadvertent impacts to cultural resources are avoided.
- All project workers are prohibited from collecting artifacts or disturbing cultural resources in any area under any circumstances.
- Kodiak will ensure all contractors working for the company will adhere to all local, county, and state regulations and ordinances regarding rig moves, oversize/overweight loads, and frost law restrictions.
- Prior to construction, Kodiak will coordinate with the Fort Berthold Water Authority Director to ensure minimization of impacts to existing water distribution pipelines.
- Utility modifications would be identified during design and coordinated with the appropriate utility company.
- Disposal areas will be properly fenced to prevent human or animal access.
- H<sub>2</sub>S Contingency Plans for the well site will be submitted to the BLM as part of the APD.
- Established load restrictions for state and BIA roadways would be followed and haul permits will be acquired as appropriate.
- Suitable mufflers will be put on all internal combustion engines and certain compressor components to mitigate noise levels.
- Well sites and associated facilities will be painted in colors to allow them to better blend in with the natural background color of the surrounding landscape.
- BMPs will be used during construction to ensure contaminants to not move off site.
- The reserve pit will be netted while not actively being used.
- A semi-closed loop system will be used during drilling. Liquids from drilling will be transported off site and dry cuttings will be stabilized in place.
- If a whooping crane is sighted within one-mile of the well site or associated facilities while it is under construction, all work will cease within one-mile of that part of the project and the USFWS will be contacted immediately. In coordination with USFWS, work may resume after the bird(s) leave the area.

- All construction activities shall begin after July 15 and be completed by February 1 in order to avoid impacts to migratory birds during the breeding/nesting season.
- If a bald or golden eagle or eagle nest is sighted within 0.5 miles of the project construction areas, construction activities shall cease and the USFWS shall be notified for advice on how to proceed.
- Wire mesh or grate covers will be placed over barrels and buckets placed under valves and spigots to collect dripped oil.
- Netting with a maximum mesh size of 1.5 inches will be used to keep birds and other small animals out of open pits.
- All storage tanks and the heater/treater will be surrounded by an impermeable berm that will act as secondary containment to guard against possible spills. The berm will be sized to hold 100% of the capacity of the largest storage tank plus one full day's production.
- Re-seeding of native species shall occur as needed on stockpile areas and slope areas during reclamation.

## 4.0 CONSULTATION AND COORDINATION

The project scoping letter reproduced below was mailed on December 8, 2009. Direct mail recipients include those listed in Table 4.1. Eight comments were received within the 30-day scoping period. These comments are summarized in Table 4.1.

Dear Interested Party:

The Bureau of Indian Affairs (BIA) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA), in cooperation with the Bureau of Land Management (BLM). The proposed action includes approval by the BIA and BLM of the drilling and completion of up to 5 exploratory oil and gas wells, with 2 surface locations on the Fort Berthold Reservation by Kodiak Oil and Gas. Wells are proposed in the following locations and shown on the enclosed project location map:

Tall Bear # 10-17-8H, NWSE of Section 17, T147N-R91W in Dunn County, ND  
Tall Bear # 10-17-21H, NWSE of Section 17, T147N-R91W in Dunn County, ND  
Charging Eagle # 15-22-15H, SWSE of Section 22, T147N-R92W in Dunn County, ND  
Charging Eagle # 15-22-27H, SWSE of Section 22, T147N-R92W in Dunn County, ND

Each well bore would be located within a 640-acre or 1280-acre spacing unit, to be determined depending upon specific location, and will be positioned to utilize existing roadways for access to the greatest extent possible. The drilling of these well sites is proposed to begin as early as the fall of 2010.

To ensure that social, economic, and environmental effects are analyzed accurately, we solicit your views and comments on the proposed action, pursuant to Section 102(2) (D) (IV) of NEPA, as amended. We are interested in developments proposed or underway that should be considered in connection with the proposed project. We also ask your assistance in identifying any property or resources that you own, manage, oversee or otherwise value that might be adversely impacted. Please send your replies and requests for additional project information to:

Kodiak Oil & Gas  
Attn: Jennifer Martin  
1625 Broadway, Suite 250  
Denver, CO 80202  
303-592-8075

If we do not hear from you by January 10<sup>th</sup>, 2010, we will assume that you have no comment on this project. Questions for the BIA can be directed to Marilyn Bercier at (605) 226-7656.

Sincerely,

Russ D. Cunningham  
Exploration Manager



**Table 4.1: Scoping Contacts**

<b>Addressee</b>	<b>Response</b>
<b>MHA Nation</b>	
Marcus Wells, Chairman	No comments received.
V. Judy Brugh, Four Bears Representative	No comments received.
Mandaree Representative	No comments received.
Malcolm Wolf, New Town Representative	No comments received.
Mervin Packineau, Parshall/Lucky Mound Representative	No comments received.
Barry Benson, Twin Buttes Representative	No comments received.
Frank Whitecalfe, White Shield Representative	No comments received.
Perry Brady, THPO	No comments received.
Fred Fox	No comments received.
Fred Poitra	No comments received.
Damon Williams	No comments received.
NAGPRA Office	No comments received.
Natural Resource Department	No comments received.
<b>Regional Native American Tribes</b>	
Chairman, Sisston-Wahpeton Sioux Tribe	No comments received.
Myra Pearson, Spirit Lake Sioux Tribe	No comments received.
Chairman, Standing Rock Sioux Tribe	No comments received.
<b>U.S. Department of Agriculture</b>	
Natural Resource Conservation Service; Bismark, ND	Recommend that impacts to farmland and wetlands be avoided.
Little Missouri National Grassland; Watford City, ND	No comments received.
<b>U.S. Department of Defense</b>	
Chief Missile Engineer, Minot Air Force Base	No comments received.
U.S. Army Corps of Engineers, Garrison Project Office	No comments received.
U.S. Army Corps of Engineers; Omaha, NE	Project proposal appears to be located outside of 100-year flood plains. Plans should be coordinated with the USFWS, ND Game and Fish Department and ND State Historic Preservation Office. If construction activities involve work in waters of the U.S., a Section 404 permit may be required.
U.S. Army Corps of Engineers; Bismark, ND	No comments received.
U.S. Army Corps of Engineers; Riverdale, ND	No comments received.
<b>U.S. Department of Energy</b>	
Western Area Power Administration; Bismark, ND	No comments received
<b>U.S. Department of Homeland Security</b>	
Federal Emergency Management Agency; Denver, CO	No comments received
<b>U.S. Department of the Interior</b>	
Bureau of Land Management; Dickinson, ND	No comments received.
Bureau of Reclamation; Bismark, ND	Project could potentially affect water pipelines installed for Fort Berthold Rural Water System. Request that Kodiak coordinate with Marvin Danks prior to construction.
Fish and Wildlife Service; Bismark, ND	No comments received.
US Forest Service; Watford City, ND	No comments received.
National Park Service, Midwest Regional Office	No comments received.
<b>U.S. Environmental Protection Agency</b>	
Region 8 NEPA Program; Denver, CO	No comments received.

Region 8 Water Quality Program; Denver, CO  
**U.S. Department of Transportation**  
Federal Aviation Administration; Bismark, ND  
**North Dakota State Government**

No comments received.

Department of Health, Environmental Health Section

Care should be taken during construction to minimize adverse impacts on water bodies. Caution must be taken to minimize spills of oil and grease that may reach the receiving water(s) from equipment maintenance and/or the handling of fuels. Efforts should be made to control fugitive dust. All waste gas should be routed to a flare or other combustion device with sufficient stack height to assure compliance with NAAQS. Voluntary implementation of BMP to minimize erosion and control sediment to protect surface water quality.

Department of Transportation, Office of Project Development

No comments received

Game and Fish Department, Conservation and Communication Division

Primary concern is with fragmentation/loss of wildlife habitat. Recommended that construction within native prairie and wooded draws be avoided to extent possible. Also suggested botanical surveys be completed during appropriate season and aerial raptor surveys be conducted for nests before construction.

Indian Affairs Commission

No comments received.

Parks and Recreation, Planning and Natural Resources Division

Project does not affect state lands or Land and Water Conservation Fund recreation projects coordinated by ND P&R. There are no known occurrences of plant or animal species of concern or other significant ecological communities within a one mile radius of the project area. Impacted areas should be revegetated with native species.

State Water Commission

Property is not located in an identified floodplain and project will not likely impact an identified floodplain. Waste material must be disposed of properly, not placed in identified floodway areas. No sole-source aquifers have been designated in ND.

State Historical Society of North Dakota/SHPO

Request copy of cultural resource reports.

**County Governments**

Reinhard Hauck, Dunn County  
Ray Kadrmaz, Dunn County  
Julie Schenfish, McLean County  
County Courthouse, Mercer County  
David Hynek, Mountrail County  
Carroll Erickson, Ward County  
Richard Cayko, McKenzie County  
Frances Olson, McKenzie County

No comments received.  
No comments received.  
No comments received.  
No comments received.  
No comments received.  
No comments received.  
No comments received.  
No comments received.

**Municipal Governments**

New Town Municipal Airport  
Parshall-Hankins Field Airport  
Barnes County Municipal Airport  
Marvin Danks, Ft. Berthold Rural Water - TAT

No comments received.  
No comments received.  
No comments received.  
No comments received.

**Private Individuals, Companies and/or Corporations**

Xcel Energy; Fargo, ND  
Warren Hoffman; Killdeer, ND

No comments received.  
No comments received.

**Utility Companies**

McKenzie Electric Cooperative  
McLean Electric Co-operative, Inc.  
Mid-Continent Cable Company

No comments received.  
No comments received.  
No comments received.

Montana-Dakota Utilities  
NoDak Electric Co-op, Inc.  
Northern Border Pipeline Company  
Reservation Telephone Cooperative  
Southwest Water Authority  
West Plains Electric Co-operative, Inc.

No comments received.  
No comments received.  
No comments received.  
No comments received.  
No comments received.  
No comments received.





United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Ecological Services  
3425 Miriam Avenue  
Bismarck, North Dakota 58501



SEP 23 2010

Ms. Shanna Braun  
Environmental Planner  
Kadmas, Lee & Jackson  
1505 S 30<sup>th</sup> Avenue  
P.O. Box 96  
Moorhead, Minnesota 56561-0096

Re: Kodiak Oil & Gas Draft  
Environmental Assessment  
Modification for Charging Eagle 15-  
22, Fort Berthold Reservation

Dear Ms. Braun:

This is in response to your August 24, 2010, modified draft environmental assessment (EA) on one proposed exploratory oil and gas well proposed to be drilled and completed by Kodiak Oil & Gas, Inc. (Kodiak) on the Fort Berthold Reservation, Dunn County, North Dakota.

Specific location for the proposed well is:

Charging Eagle #15-22: T. 147 N., R. 92 W., Section 22, SW¼SE¼

We offer the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.) (NEPA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", and the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA).

**Threatened and Endangered Species**

In an e-mail dated October 13, 2009, the Bureau of Indian Affairs (BIA) designated Kadmas, Lee and Jackson (KLJ) to represent the BIA for informal Section 7 consultation under the ESA. Therefore, the U.S. Fish and Wildlife Service (Service) is responding to you as the designated non-Federal representative for the purposes of ESA, and under our other authorities as the entity preparing the NEPA document for adoption by the BIA.

In an August 10, 2010, letter, the Service concurred with your "may affect, is not likely to adversely affect" determination for piping plovers, interior least terns, pallid sturgeon, black-footed ferret, and gray wolf. This concurrence was based on the lack of existing or potential habitat within or near the project area.

The Service concurs with your "may affect, not likely to adversely affect" for whooping crane. This concurrence is predicated on Kodiak's commitment to stop work on the proposed site if a whooping crane is identified within one mile of the proposed project area for the duration of the time the whooping crane is present and immediately notify the Service of the bird's presence. Work may resume in coordination with the Service once the crane(s) have left the area.

#### **Migratory Birds and Eagles**

According to your EA, Kodiak has committed to the following measures:

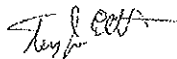
- No construction will take place between February 1 and July 15;
- Place mesh or grate covers over barrels and buckets placed under valves to collect drilled oil;
- Place netting over the cuttings pit that has a maximum mesh size of 1.5 inches.

During a field survey conducted on August 23, 2010, no eagle nests were found within 0.5 mile of the project area.

With these commitments made by Kodiak as stated above, the Service finds this proposal to be in compliance with MBTA and BGEPA.

Thank you for the opportunity to comment on this draft EA. If you require further information or the project plans change, please contact me or Heidi Kuska of my staff at (701) 250-4481 or at the letterhead address.

Sincerely,



for Jeffrey K. Towner  
Field Supervisor  
North Dakota Field Office

cc: Bureau of Indian Affairs, Aberdeen  
(Attn: Marilyn Bercier)  
Bureau of Land Management, Dickinson  
ND Game & Fish Department, Bismarck

## 5.0 LIST OF PREPARERS

### Chapters 1, 2, and 4:

Jennifer Martin	Kodiak Oil & Gas	Permitting Coordinator
Russ Branting	Kodiak Oil & Gas	Operations Manager
Russ Cunningham	Kodiak Oil & Gas	VP Exploration

### Chapter 3:

Shanna Braun	KLJ	Environmental Specialist
Charlotte Brett	KLJ	Sr. Environmental Specialist
Jerry Krieg	KLJ	Director, Natural Resources
Skip Skattum	KLJ	Draftsman
Grady Wolf	KLJ	Environmental Specialist
Various	KLJ	Various Surveyors and Draftsmen

## 6.0 REFERENCES

"Bald Eagle Fact Sheet: Natural History, Ecology, and History of Recovery." U.S. Fish & Wildlife Service. 26 Aug. 2009. U.S. Department of Interior, U.S. Fish & Wildlife Service, Midwest Region. 13 Oct. 2009. <<http://www.fws.gov/midwest/eagle/recovery/biologue.html>>.

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# **Notice of Availability and Appeal Rights**

Kodiak Oil and Gas (USA) Inc.: Charging Eagle 15-22-15-3H, Charging Eagle 15-22-15-4H  
and Charging Eagle 15-22-27H

**The Bureau of Indian Affairs (BIA) is planning to issue administrative approvals related to an Environmental Assessment for up to three wells as shown on the attached map. Construction by Kodiak is expected to begin in the Fall of 2010.**

**An environmental assessment (EA) determined that proposed activities will not cause significant impacts to the human environment. An environmental impact statement is not required. Contact Howard Bemer, Superintendent at 701-627-4707 for more information and/or copies of the EA and the Finding of No Significant Impact (FONSI).**

**The FONSI is only a finding on environmental impacts – it is not a decision to proceed with an action and *cannot* be appealed. BIA’s decision to proceed with administrative actions *can* be appealed until October 27, 2010, by contacting:**

**United States Department of the Interior  
Office of Hearings and Appeals  
Interior Board of Indian Appeals  
801 N. Quincy Street, Suite 300, Arlington, Va 22203.**

**Procedural details are available from the BIA Fort Berthold Agency at 701-627-4707.**

Project locations

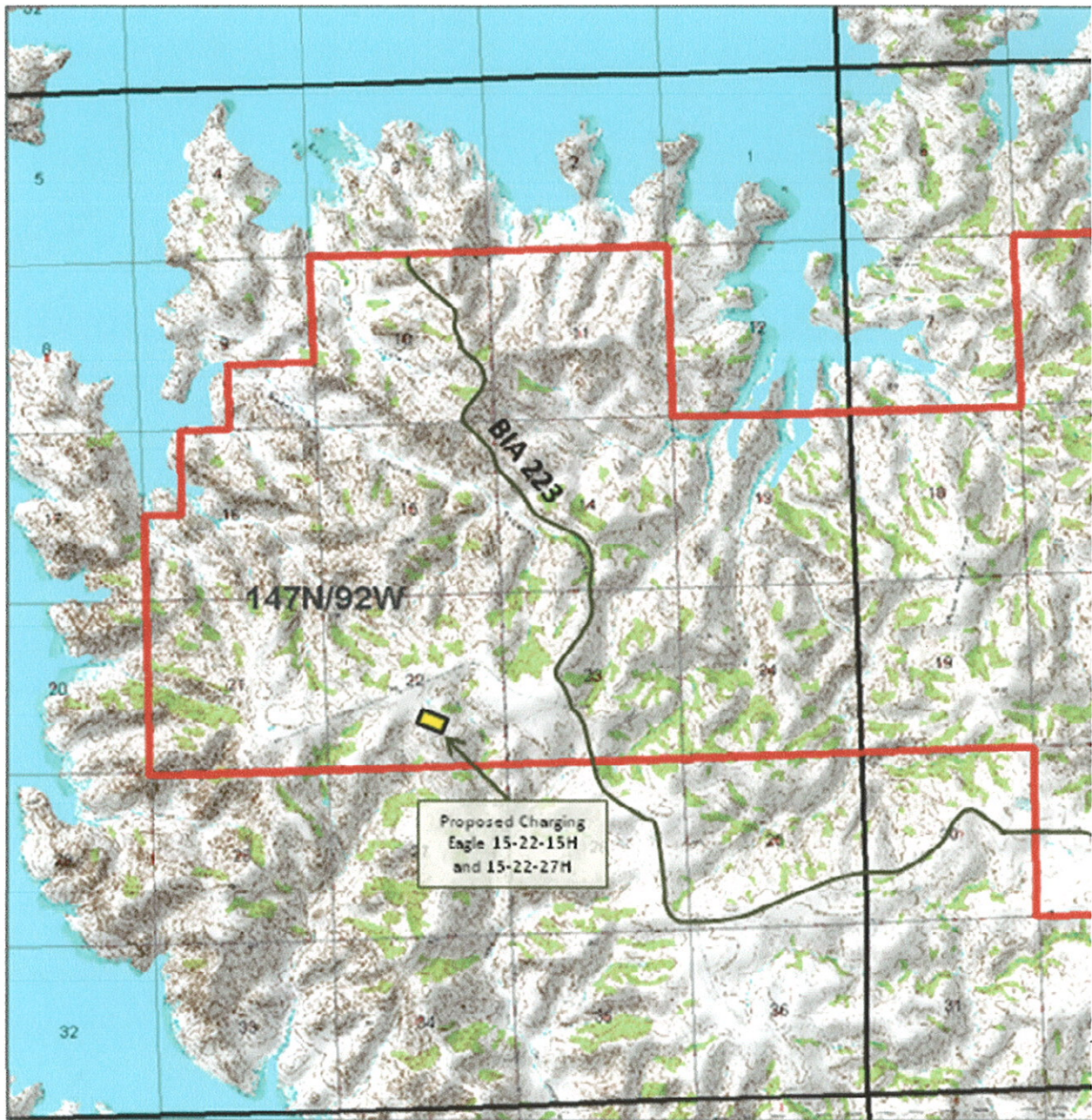


Figure 1. Proposed Charging Eagle 15-22 location.