United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Great Plains Regional Office
115 Fourth Avenue S.E., Suite 400
Aberdeen, South Dakota 57401

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
DESCRM
MC-208

JUN 17 2011

MEMORANDUM

TO: Superintendent, Fort Berthold Agency

FROM: Acting 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 three proposed oil/gas well pads by XTO Energy, 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 are copies 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 (40 C.F.R. Part 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: Tex Hall, Chairman, Three Affiliated Tribes (with attachment)
Elgin Crows Breast, Tribal Historic Preservation Officer (with attachment)
Derek Enderud, Bureau of Land Management (with attachment)
Jonathon Shelman, US Army Corps of Engineers
Jeff Hunt, Fort Berthold Agency

Finding of No Significant Impact

Grinnell 41X-1, Grinnell 34X-33, & GeorgeBlackHawk 21X-6 Well Pads

Fort Berthold Indian Reservation, Dunn County, North Dakota

The U.S. Bureau of Indian Affairs (BIA) received a proposal for three oil/gas well pads that could accommodate up to 6 wells each, access road easements, and related infrastructure on the Fort Berthold Indian Reservation within Dunn County, North Dakota. The Grinnell 41X-1 well pad and access road is located in the NE ¼ of the NE ¼ of Section 1 in Township 148N and Range 92W. The Grinnell 34X-33 well pad is located in the SW ¼ of the SE ¼ of Section 33 in Township 148N and Range 91W. The GeorgeBlackHawk well pad is located in the NE ¼ of the NW ¼ of Section 6 in Township 148N and Range 91W. Each well pad has a short access road that would stem from an existing road. Associated federal actions by the 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 Application for Permit to Drill.

Potential of the proposed actions to affect the human environment was analyzed in the attached Environmental Assessment (EA), as required by the National Environmental Policy Act. Based on the recently completed EA, I have determined the proposed projects 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, archeological, cultural and traditional properties, sites and practices. The Tribal Historic Preservation Officer has concurred with BIA's determination that no historic properties will be affected.
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.

Tim LaFromboise

Acting Regional Director

6-17-2011

Date

FINAL
ENVIRONMENTAL ASSESSMENT

United States Bureau of Indian Affairs

Great Plains Regional Office
Aberdeen, South Dakota

XTO Energy, Inc.

Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 Exploratory Wells
(able to accommodate up to 6 wells from each well pad location)

Fort Berthold Indian Reservation

June 2011

For information contact:
Bureau of Indian Affairs, Great Plains Regional Office
Division of Environment, Safety and Cultural Resources Management
115 4th Avenue SE
Aberdeen, South Dakota 57401
(605) 226-7656

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Acronyms and Abbreviations

AAQM	Ambient Air Quality Monitoring
ac	acre
AIRFA	American Indian Religious Freedom Act
APD	Application for Permit to Drill
APE	Area of Potential Effect
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BMP	Best management practices
°C	Celsius degrees
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWCTP	Cooperative Whooping Crane Tracking Project
E	East (Easting)
EA	Environmental Assessment
e.g.	For example
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
°F	Fahrenheit degrees
FBIR	Fort Berthold Indian Reservation
FEL	From East (section) Line
FNL	From North (section) Line
FONSI	Finding of No Significant Impact
FSL	From South (section) Line
FWL	From West (section) Line
GAL/MIN	Gallons per minute
GPS	Global Positioning System
H_2S	Hydrogen Sulfide
HCPC	Historic Climax Plant Community
HPRCC	High Plains Regional Climate Center
HUC	Hydrologic Unit Code
in	Inches
i.e.	that is or such as
MHA Nation	Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
MTNHP	Montana Natural Heritage Program
N	North (Northing)
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
National Register	National Register of Historic Places
ND	North Dakota
NDDA	North Dakota Department of Agriculture
NDDH	North Dakota Department of Health
NDGFD	North Dakota Game and Fish Department
NDIC	North Dakota Industrial Commission
NDPR	North Dakota Parks and Recreation
NE	Northeast
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxide

Acronyms and Abbreviations

NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRO	Natural Resource Options, Inc.
NTL	Notice to Lessees
NWI	National Wetland Inventory
NWR	National Wildlife Refuge
O_3	Ozone
Pb	Lead
PBS&J	Post, Buckley, Schuh, and Jernigan
PM	Particulate Matter
PPB	Parts Per Billion
PPM	Parts Per Million
R	Range
Reservation	Fort Berthold Indian Reservation
ROW	Right-of-way
S	South
SAAQS	State Ambient Air Quality Standards
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Office
SMU	Soil Map Unit
SO_2	Sulfur Dioxide
SYN	Synonym
T	Township
TCP	Traditional and Cultural Property
TE	Threatened and Endangered Species
THPO	Tribal Historic Preservation Officer
µg/m^3	Micrograms per cubic meter
µmhos/cm	Microsiemens per centimeter
US	United States
USA	United States of America
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator coordinate system
VOC	Volatile Organic Compound
W	West
XTO	XTO Energy, Inc.

1.0 Purpose and Need for the Proposed Action

XTO Energy, Inc. (XTO) is proposing to initiate the exploration phase of oil development. The exploration phase would begin by locating exploratory wells (up to six) on a single well pad at three proposed project sites on the Fort Berthold Indian Reservation (FBIR; Reservation) (Figures 1a and 1b). The proposed well pad locations are on land held in trust by the United States in Dunn County, North Dakota. The U.S. Bureau of Indian Affairs (BIA) is the surface management agency for potentially affected tribal lands and individual allotments. The proposed project would also include the use of the existing Hale Marina Road and the development of three new access roads (Figures 1a and 1b).

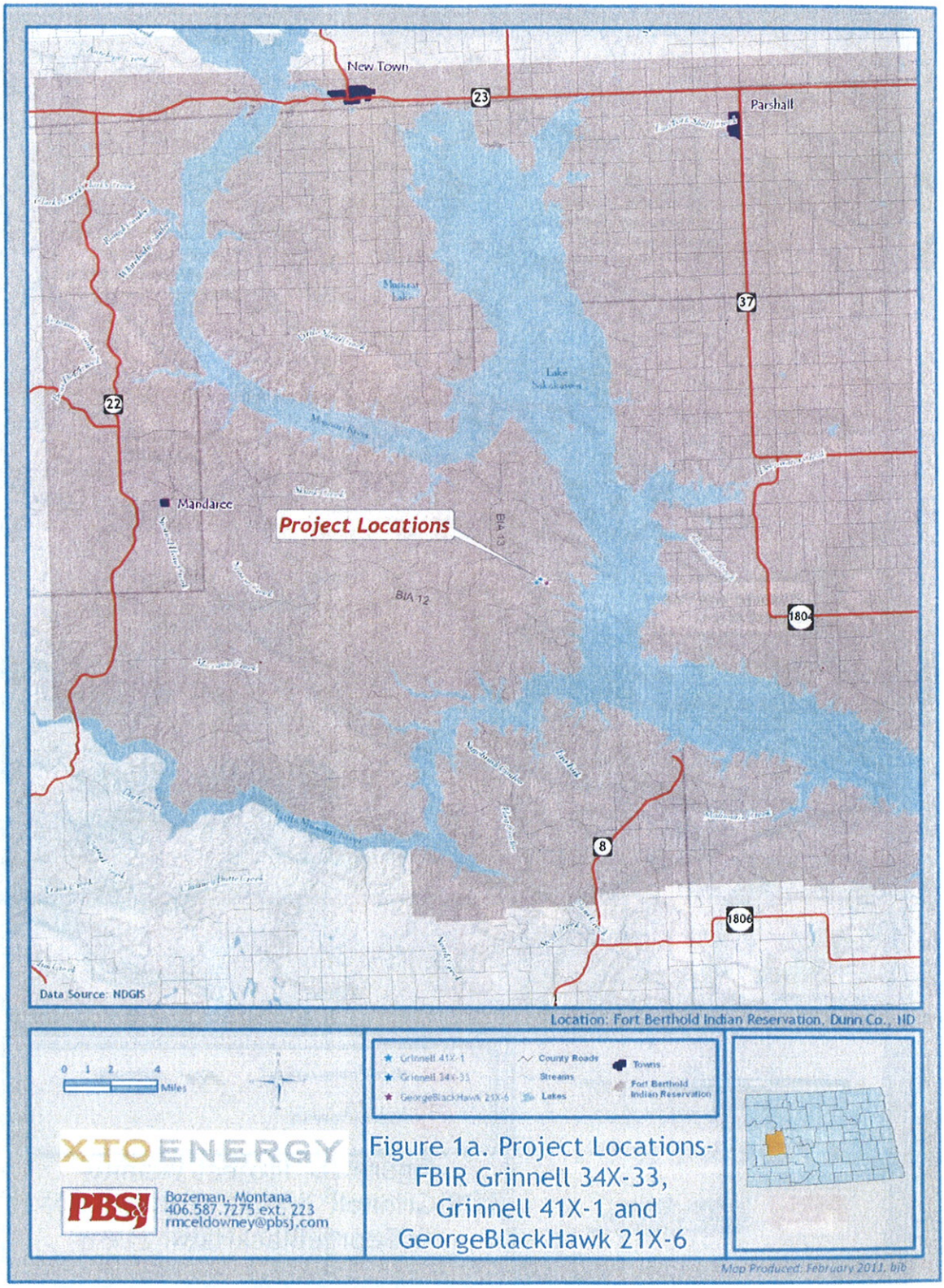
The proposed project is intended to explore the commercial potential on the Reservation of the Bakken oil pool (hereafter simply referred to as the "Bakken"), as defined by the North Dakota Industrial Commission, Oil & Gas Division. Because leasing and development of mineral resources offer substantial benefits to both the Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation (MHA Nation) and to individual tribal members, economic development of available resources is consistent with the BIA's general mission. The proposed activities are consistent with efforts to improve self-governance and economic stability pursuant to the *Indian Reorganization Act* (*Wheeler-Howard Act* of 1934, as amended). Oil and gas exploration and development activities are conducted under the authority of the *Indian Mineral Leasing Act* of 1938 (25 United States Code [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 (Public Law 109-58, 119 Statute 594). An agreement was signed on January 13, 2010 between the State of North Dakota and the Three Affiliated Tribes with the intent to increase the production of oil and gas on the FBIR; initially signed in 2008, the present agreement is intended to continue indefinitely. The BIA actions in connection with the proposed project are largely administrative and include 1) approval of leases, easements and rights-of-way; 2) determinations regarding cultural resource effects; and 3) a recommendation to the Bureau of Land Management (BLM) regarding approval of the Application for Permit to Drill (APD).

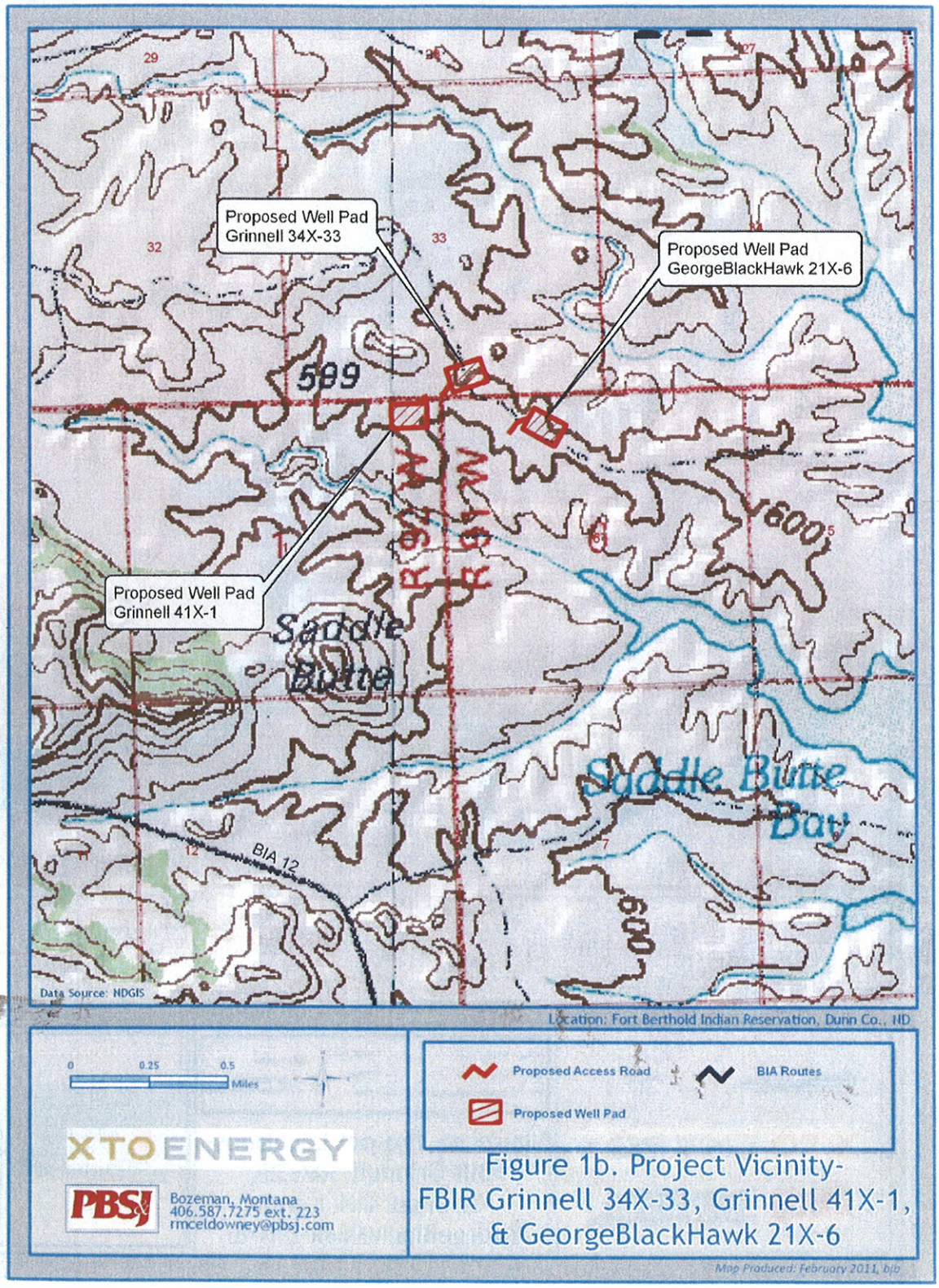
These proposed federal actions require compliance with the *National Environmental Policy Act* of 1969 (NEPA) (42 USC 4321, *et seq.*) and regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500–1508); *Section 7* of the *Endangered Species Act* (ESA) of 1973, as amended; the BLM operating regulations, *Onshore Oil and Gas Orders* (43 CFR 3164.1). Additionally, the proposed project would be subject to agency review in accordance with Executive Order 13212 – *Actions to Expedite Energy-Related Projects*. Analysis of the proposed project's potential to affect the human environment is expected to both substantiate and explain federal decision-making.

The APDs submitted to the BLM by XTO are included with this document; they describe developmental, operational, and reclamation procedures and practices that contribute to the technical basis of this Environmental Assessment (EA) (Appendix A). 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 would result in either a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS). The format and content of this EA complies with the guidance as per coordination with the BIA Great Plains Regional Office, Aberdeen, South Dakota.

There are several components to the Proposed Action.

- Construction of three new access roads would be needed.
- Each well pad would be constructed to accommodate drilling operations.


New Town
Parshall
Mandaree
Project Locations
BIA 13
BIA 12
23
37
22
1804
8
1806
Data Source: NDGIS
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 1 2 4
Miles
Grinnell 41X-1
Grinnell 34X-33
GeorgeBlackHawk 21X-6
County Roads
Streams
Lakes
Towns
Fort Berthold Indian Reservation
XTO ENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Figure 1a. Project Locations- FBIR Grinnell 34X-33, Grinnell 41X-1 and GeorgeBlackHawk 21X-6
Map Produced: February 2011, bib


Proposed Well Pad
Grinnell 34X-33
Proposed Well Pad
GeorgeBlackHawk 21X-6
Proposed Well Pad
Grinnell 41X-1
599
600
Saddle Butte
Saddle Butte Bay
BIA 12
29
32
33
Data Source: NDGIS
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 0.25 0.5
Miles
Proposed Access Road
BIA Routes
Proposed Well Pad
XTO ENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Figure 1b. Project Vicinity-
FBIR Grinnell 34X-33, Grinnell 41X-1,
& GeorgeBlackHawk 21X-6
Map Produced: February 2011, bjb

- A semi-closed loop system would be used for all wells drilled from each pad. A semi-closed loop involves the use of a tank to remove drilling fluid from the cuttings, a lined pit to bury the cuttings, and a lined catch-all pit to temporarily store excess water on the site and cement overflow when cementing the drill hole.
- Drilling and production information could result in long-term commercial production at the sites, in which case supporting facilities would be installed.
- The working portion of each well pad and access road would remain in place during commercial production.
- All project components would eventually be abandoned and reclaimed, as specified in this document and the APDs, and according to any conditions imposed by the BIA or BLM, unless formally transferred with federal approval to either the BIA or the landowner.

The proposed well pad would allow exploratory wells to be drilled; 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 three well pads (up to six wells on each pad), three access roads, and directly associated infrastructure and facilities. Additional NEPA analysis, decisions, and federal actions would be required prior to any other development. Any authorized project would comply with all applicable federal, state, and tribal laws, rules, policies, regulations, and agreements. No construction, drilling, or other ground-disturbing operations would begin until all necessary leases, easements, surveys, clearances, consultations, permissions, determinations, and permits are in place.

2.0 Proposed Action and Alternatives

The **No Action Alternative** must be considered within an EA. If this alternative is selected, the BIA would not approve leases, rights-of-way or other administrative proposals for the proposed project. Applications for APDs for the listed well locations would not be approved. Current land use practices would continue. Development under other oil and gas leases would remain a possibility, but No Action is the only available or reasonable alternative to the specific proposal considered in this document.

This document analyzes the impacts of specific proposed actions – exploratory oil wells on allotted surface and mineral estate within the boundaries of the Fort Berthold Indian Reservation in Dunn County, North Dakota. Each of the three proposed well pads would house up to six wells to test the commercial potential of the Bakken. Proposed site-specific actions would include several components, including the construction of two access roads, construction of three well pads, installation of fencing around the well pad, drilling operations, production facilities, tanker traffic, implementation of Best Management Practices (BMPs) and reclamation.

The specific pad locations and access road routes were determined during pre-on-site inspections by the proponent, civil surveyor, environmental consultant, BIA Environmental Specialist, and Tribal Historic Preservation Office (THPO) monitor on July 1, 2010. Preliminary resource surveys were conducted at the time of this pre-on-site inspection in order to determine potential impacts to cultural and natural (i.e., biological and physical) resources. The locations were inspected in consideration of topography, location of topsoil/subsoil stockpiles, natural drainage and erosion control, flora, fauna, habitat, historical and cultural resources, and other surface issues. The final locations were determined in consideration of the previously identified issues. For example, the original access road leading to the Grinnell 34X-33 well pad was moved and now enters the pad from the southwest; this greatly reduced the length of the access road and lessened the amount of ground disturbance. Avoidance measures and other protective measures were incorporated into the final project design to minimize impacts to evaluated resources, as appropriate (see

Section 2.9). More in-depth cultural and natural resources surveys were conducted later in July 2010. The proposed well pad and access road were surveyed on July 13-14 and briefly on September 28, 2010. During the inspections, the BIA gathered information that was necessary for developing site-specific mitigation measures that would be incorporated into the final APDs.

All construction activities would follow lease stipulations, practices, and procedures outlined in the APDs and in guidelines and standards from the book, *Surface Operating Standards for Oil and Gas Exploration and Development* (also known as the Gold Book; USDI-USDA 2007), conditions described in this EA, and any conditions added by either the 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. If any additional infrastructure is required at the site, such as spur pipelines or utilities (i.e., electricity, water, and phone), the infrastructure would be installed in previously disturbed right-of-way identified and accounted for in this EA. If the infrastructure would require disturbance outside of the approved right-of-way, additional NEPA documentation and environmental analysis would be required. The remainder of this chapter describes the proposed action in detail.

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 longer-term residential camps are proposed. Construction and drilling personnel would commute to the project site from the nearest town. 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. During drilling, electricity would be generated onsite with generators.

2.2 Access Roads

The existing Hale Marina Road connects BIA 12 to each access road of Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6. The Hale Marina Road would be improved to accommodate truck traffic. The improvement of this road would be included in a separate EA document. For Grinnell 41X-1, roughly 220 feet of new road would be constructed. For Grinnell 34X-33, approximately 315 feet of new access road would be built. For GeorgeBlackHawk 21X-6, approximately 455 feet of new access road would be built. Existing conditions of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 new access roads are shown in Figures 2.2a, 2,2b, and 2.2c, respectively. Signed agreements to allow road construction in affected surface allotments would be part of a right-of-way (ROW) agreement that would be procured after approval of the FONSI and APDs. A maximum disturbed ROW width of 100 feet (50 feet either side of centerline) at GeorgeBlackHawk 21X-6, and 66 feet (33 feet on either side of centerline) at the two Grinnell well sites, would result in roughly 0.33 acre, 0.48 acre, and 1.04 acres of surface disturbance to create the new access roads at Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk, respectively.

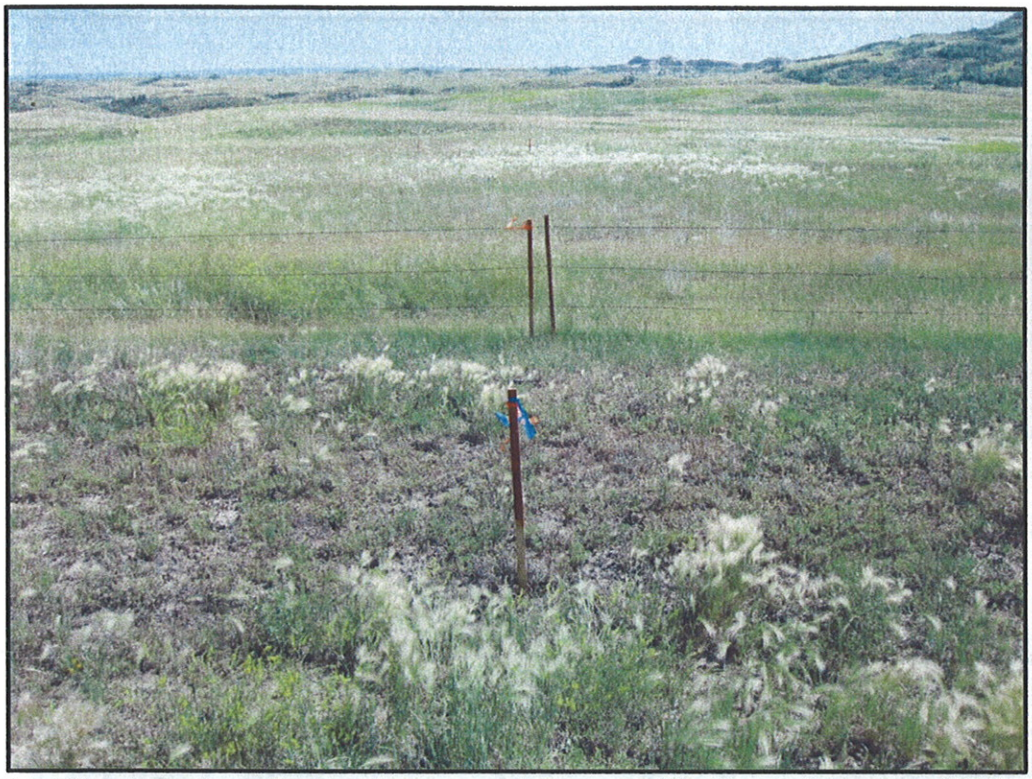


Figure 2.2a: View is south southeast at the proposed access road leading to the proposed Grinnell 41X-1 well pad. Source: PBS&J, July 2010.

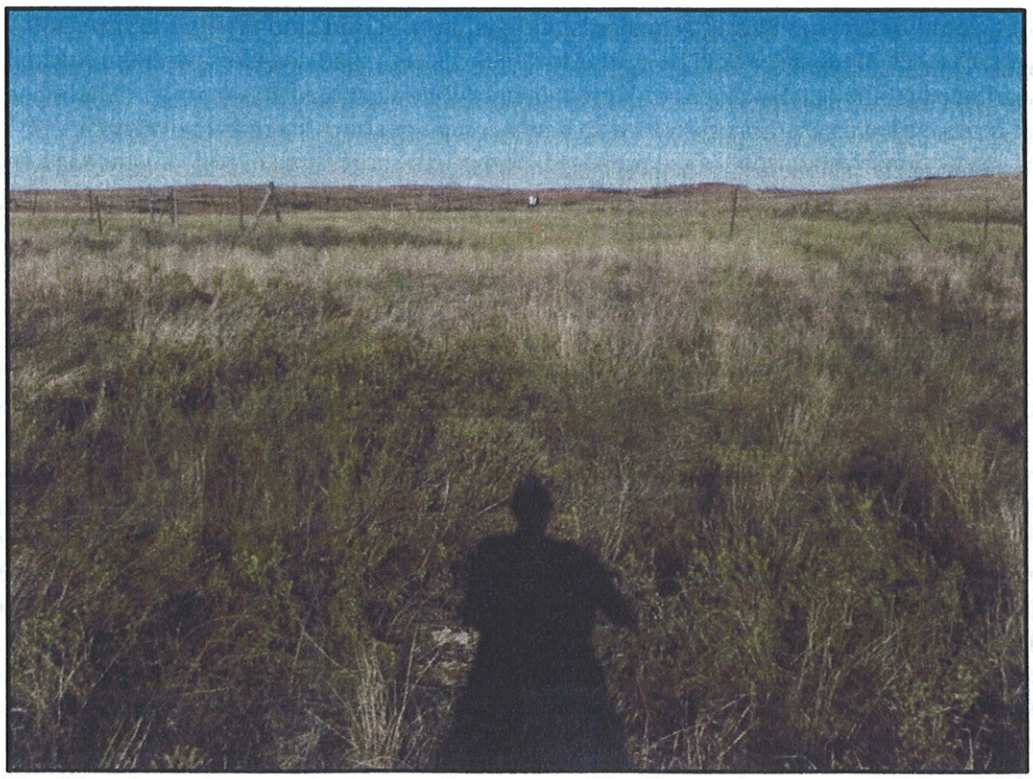


Figure 2.2b: View is northeast at the proposed access road leading to the proposed Grinnell 34X-33 well pad. Source: PBS&J, September 2010.

Figure 2.2c: View is northeast at the proposed access road leading to the proposed GeorgeBlackHawk 21X-6 well pad. Source: PBS&J, July 2010.

Construction would follow road design standards outlined in the Gold Book (USDI-USDA 2007). A minimum of six inches of topsoil would be stripped from the access road corridors, with the stockpiled topsoil redistributed on the outslope areas of borrow ditches following road construction. These borrow ditch areas would be re-seeded as soon as practical with a native seed mixture determined by the BIA. If commercial production is established at the proposed location, the access road would be graveled with a minimum of four inches of gravel and the roadway would remain in place for the life of the well. Details of road construction are addressed in the Multi-Point Surface Use & Operations Plan in the respective APD (Appendix A).

2.3 Well Pad

The proposed well pads would consist mainly of an area leveled for the drilling rig and related equipment. A semi-closed loop system would be used for drilling procedures. The well pad areas would be cleared of vegetation, stripped of topsoil, and graded to specifications in the respective APD (Appendix A). Topsoil would be stockpiled and stabilized until disturbed areas were reclaimed and revegetated. At each project area (Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6) at least the top 6 inches of soil would be stock piled into two piles in order for it to be more accessible for interim reclamation. All disturbed woody vegetation would be mulched and added to the top of the topsoil stock piles. The topsoil stockpiles would be seeded with native species to maintain its viability. Excavated subsoils would be used in pad construction, with the finished well pad graded to ensure positive water drainage away from the drill site. Erosion control would be maintained through prompt revegetation and by constructing all necessary surface water drainage control, including berms, diversion ditches, and waterbars. Existing conditions of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 well pads are shown respectively in Figures 2.3a, 2.3b, and 2.3c.

Figure 2.3a: View is looking north-northeast toward the center of the proposed Grinnell 41X-1 well pad from the middle of the south side. Source: PBS&J, July 2010.

Figure 2.3b: View is looking north toward the center of the proposed Grinnell 34X-33 well pad from the middle of the east side. Source: PBS&J, July 2010.

Figure 2.3c: View is looking north-northeast toward the center of the proposed GeorgeBlackHawk 21X-6 well pad from the middle of the south side. Source: PBS&J, July 2010.

The levelled area of well pad required for drilling and completion operations (including pits for drilled cuttings) for Grinnell 41X-1 would be approximately 600 feet by 400 feet (5.51 acres). Cut and fill slopes on the edge of the pad and stockpiles of soil would result in approximately 0.98 acre of additional surface disturbance, resulting in a total surface disturbance of almost 6.49 acres. Details of pad construction and reclamation are diagrammed in the APD (Appendix A).

The levelled area of well pad required for drilling and completion operations (including pits for drilled cuttings) for Grinnell 34X-33 would be approximately 600 feet by 400 feet (5.51 acres). Cut and fill slopes on the edge of the pad and stockpiles of soil would result in almost 1.09 acres of additional surface disturbance, resulting in a total surface disturbance of almost 6.60 acres. Details of pad construction and reclamation are diagrammed in the APD (Appendix A).

The levelled area of well pads required for drilling and completion operations (including pits for drilled cuttings) for GeorgeBlackHawk 21X-6 would be approximately 600 feet by 400 feet (5.51 acres). Cut and fill slopes on the edge of the pad and stockpiles of soil would result in roughly 0.82 acres of additional surface disturbance, resulting in a total surface disturbance of almost 6.33 acres. Details of pad construction and reclamation are diagrammed in the APD (Appendix A).

For all three sites, the top of fill slopes would be bermed (2 feet) to prevent run-off and silt fence placed at the bottom of the fill slopes to prevent and minimize sedimentation offsite. The corners would be rounded to create a greater buffer to drainages. Where feasible, a drainage ditch would be installed on the up-gradient side of the well pad.

2.4 Drilling

After securing leases for mineral estates, XTO submitted APDs to the BLM on November 1, 2010 and January 6, 2011, and March 9, 2011 proposing to drill from allotted surfaces in the listed locations. The BLM North Dakota Field Office forwarded copies of the APDs to BIA's Fort Berthold Agency in New Town, North Dakota, for review and concurrence. BLM would not approve an APD until BIA completes its NEPA process and recommends APD approval. No drilling would begin until a permit has been obtained from the BLM.

The following paragraphs decribe the drilling that is generally applicable to each well that would be drilled on each of the three well pads. Initial drilling on each well pad would be vertical to an approximate depth ranging from 9,500 to 10,500 feet at the kickoff point where the drill bit would begin to be angled for horizontal drilling. Drilling would become roughly horizontal at an approximate depth of 10,000 to 11,500 feet below the land surface, followed by lateral reaches in the Bakken. Completed wellbores would range in length from 20,000 to 25,000 feet. The minimum setbacks section borders required by NDIC would be maintained or achieved through directional drilling.

Rig transport and on-site assembly would take about five to twelve days for the initial well. Drilling operations would require approximately 15 to 40 days to reach the target depth, using a rotary drilling rig rated for drilling operations to a vertical depth of approximately 14,000 to 20,000 feet. A typical drill rig is shown in Figure 2.4. For the first 1,500 to 2,500 feet drilled, a fresh-water based mud system with non-hazardous additives such as bentonite would be used to minimize contaminant concerns. Approximately 50,000 to 90,000 gallons of water would be obtained from a commercial source for this drilling stage. This water would be collected and reused as much as possible.

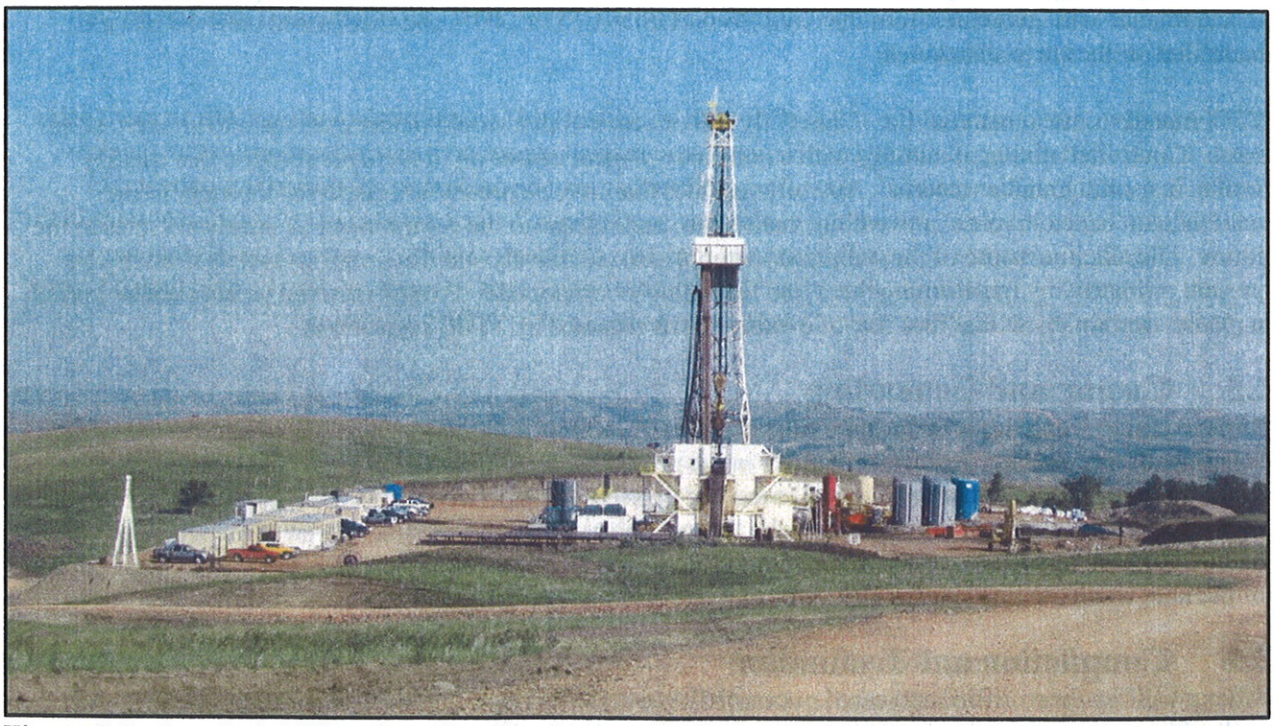


Figure 2.4: A typical drilling rig and well pad. Source: PBS&J, July 2010.

Oil-based drilling fluids could reduce the potential for hole sloughing while drilling through water-sensitive formations (shales). After setting and cementing the near-surface casing, an oil-based mud system (approximately 80% diesel fuel and 20% saltwater) would be used to drill the vertical and drill curve portion

of the hole (9,000 to 10,000 feet long). About 10,000 to 18,000 gallons of saltwater and 40,000 to 72,000 gallons of diesel fuel would be used to complete drilling to final vertical depth. These fluids would be captured and reused at other wells as much as possible. The horizontal portion of the hole would be drilled using a salt-water based mud. Roughly 50,000 to 90,000 gallons of saltwater would be needed for the horizontal portion of the hole. This water is also reused as much as possible and obtained from a commercial source. Miscellaneous drilling fluids would be contained in steel tanks placed on plastic/vinyl liners and within secondary containment berms. Drilling fluids would be recycled back into the steel tanks for reuse. Upon completion of drilling operations at each well, oil-based fluids would be collected again to the extent possible to be recycled and used elsewhere. Drilling fluids would be removed and disposed of in accordance with North Dakota Industrial Commission (NDIC) rules and regulations.

As part of the semi-closed loop system used at each site, the drill cuttings would be run through a centrifuge to remove fluids prior to being placed into a pit used to dispose of the semi-dry cuttings. This pit would be lined with an impervious (plastic/vinyl) liner to prevent any contamination of the underlying soil. Liners would be installed with sufficient bedding (either straw or dirt) to cover any rocks, would overlap the pit walls, extend under the mud tanks, and would be held in place with a trench covered with dirt. In addition, a catch-all pit would be needed to temporarily store excess water on the site and cement overflow that may occur when cementing in the surface casing. This pit would be located away from the cuttings pit, would be lined with an impervious liner, installed with sufficient bedding to cover any rocks, and secured in place with a trench and covered with dirt. Both the cutting pit and catch-all pit would have nylon nets with a maximum mesh size of 1.5 inches placed over them to prevent birds from entering them. These nets will remain in pace until the pits are reclaimed. Material contained in the catch-all pit would be removed prior to departure from the site. Pits would also be fenced on all four sides to protect personnel as well as wildlife and livestock from accidentally falling into the pit. In addition, the entire well pad would be fenced. Fencing would be installed in accordance with guidelines from the Gold Book (USDI-USDA 2007) and maintained until the pits are backfilled or the site is abandoned.

XTO intends to use a material (i.e., Class C fly ash or cement) that would render cuttings into an inert, solid mass. Controlled mixing of cuttings with a non-toxic reagent causes an irreversible reaction that quickly results in a solid granular material. Any oily residues that may be present are dispersed throughout the material and locked in place, preventing coalescence and release to the environment at significant rates in the future. 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 place, overlain by at least four feet of overburden as required by NDIC regulations.

2.5 Casing and Cementing

Surface casing would be set at an approximate depth of 1,500 to 2,500 feet and cemented back to the surface, isolating all near -surface freshwater aquifers in the project area. Additional casing would be used after drilling into the target formation at a total measured depth ranging between 10,000 to 13,000 feet. Portions of the well from the target formation through the kickoff point up into the vertical section of the wellbore are planned to be cemented to isolate various formation as well as enhance wellbore integrity. The lateral portion of the hole would be lined with a liner, part of which contains pre-drilled holes.

2.6 Completion and Evaluation

After a well has been drilled and cased, a completion (work-over) unit would be moved onto the site. For wells of the proposed depth, about 30 days are usually needed to clean out the well bore, pressure test the casing, perforate and 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 down the hole a mixture of sand and a transport medium (e.g., water, nitrogen) under extreme pressure. The resulting fractures are propped open with sand, increasing the capture zone of the well and maximizing efficient drainage of the field. After fracturing, fracture fluids and excess sand are pumped back to the

surface and removed. Fluids used in the completion procedure would be captured in tanks for disposal in strict accordance with NDIC rules and regulations.

2.7 Commercial Production

If drilling, testing, and production support commercial production from the proposed location, 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 surrounding production tanks and the heater/treater and sized to hold 100 percent of the capacity of the largest tank plus one full day's production would also be constructed from compacted subsoil. 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 a color for all permanent aboveground production facilities from standard environmental colors recommended by BLM or the Rocky Mountain Five-State Interagency Committee. Belowground electric power lines and utilities would be installed from the main lines to the well pad within the disturbed ROW.

Oil would be collected in tanks 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. The duration of production operations cannot be reliably predicted, but some oil wells have pumped for over one hundred years.

Large volumes of gas are not expected from these locations. Small volumes of gas would be flared in accordance with Notice to Lessees (NTL) 4A and NDIC regulations, which prohibit flaring for more than the initial year of operation (NDIC 38-08-06.4). Any proposal for gathering and marketing gas from this well may require additional analysis under NEPA and consideration of impacts by BIA.

Drilling and testing results would also help determine if additional exploration activities are warranted in the overall area. Should future oil/gas exploration activities be proposed by XTO on the FBIR, that proposal and associated federal actions would require additional NEPA analysis and BIA consideration prior to implementation.

2.8 Reclamation

A semi-closed loop system would be used for drilling activities. The cuttings stored in the lined pit would be treated, solidified, backfilled, and buried as soon as possible after well completion. Other interim reclamation measures to be accomplished within the first year include reduction of the cut and fill slopes, redistribution of stockpiled topsoil, and reseeding of disturbed areas. Figures 2.8a and 2.8b show how a well pad and access road could be reclaimed. If commercial production equipment is installed, the pad would be reduced in size, with the rest of the original pad reclaimed. Reclamation would include leveling, re-contouring, treating, backfilling, and reseeding. Erosion control measures would be installed. All cut and fill slopes would be hydroseeded with native species and covered with erosion control matting. Silt fences would be placed below fill slopes. Stockpiled topsoil would be redistributed and reseeded as recommended by the BIA. The working part of the well pad and the running surface of the access road would be surfaced with scoria or crushed rock from a previously approved location and erosion control measures would be installed as necessary. The outslope portions of the new access roads would be covered with stockpiled topsoil and reseeded with a seed mixture determined by the BIA, reducing the residual access-related disturbance to about 28 feet wide and about 0.20, 0.09, and 0.29 acre in size for Grinnell 41x-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-5, respectively.

If there is no commercial production from the proposed six wells at each well pad, or upon final abandonment of commercial operations, all disturbed areas would be promptly reclaimed. All facilities would be removed, well bores would be plugged with cement, and dry hole markers would be set. The

Figure 2.8a: Construction of the well pad and access road are minimized to the size necessary to perform drilling and complete operations in a safe manner. Source: USDI-USDA, 2007.

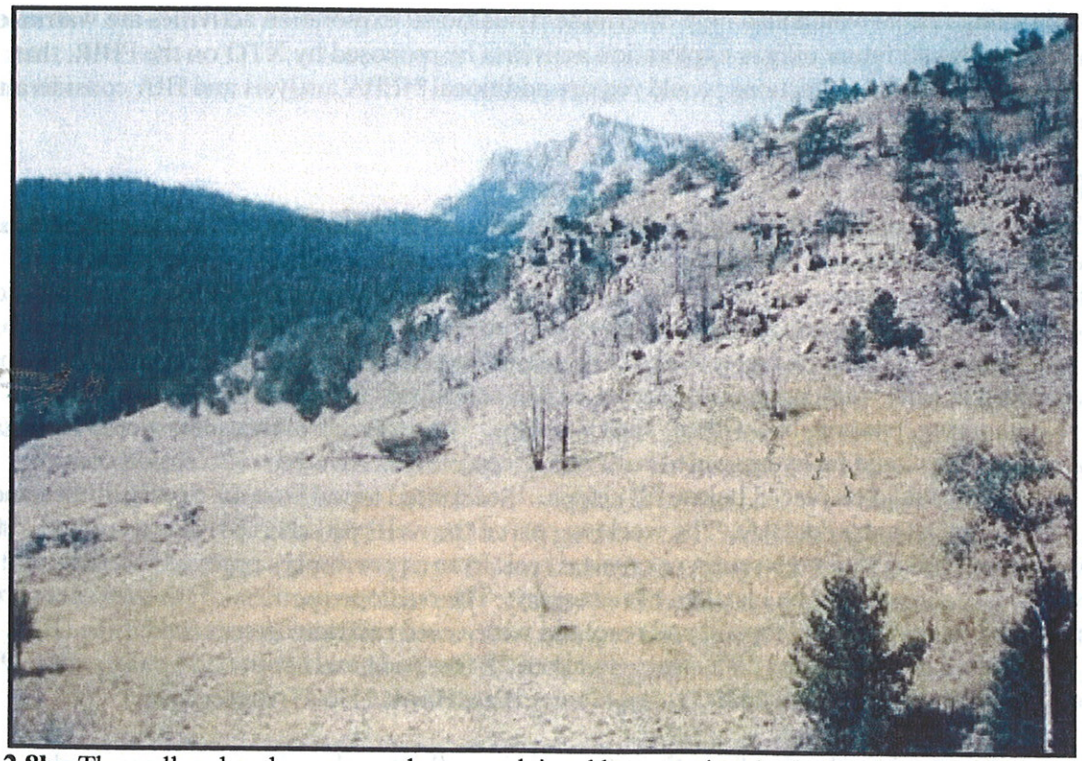


Figure 2.8b: The well pad and access road were reclaimed by returning the land to its original contours, spreading the topsoil, and vegetating the site. Source: USDI-USDA, 2007.

access road and work areas would be scarified, re-contoured, and re-seeded. An exception 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.

2.9 Preferred Alternative

The preferred alternative is to complete all of the administrative actions and approvals necessary to authorize or facilitate the proposed oil developments previously described. The proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 well pads would initiate exploration activities with the drilling of one well on each pad. Depending on the success of the initial wells and subsequent wells, up to six wells may be drilled on each single well pad. The additional five wells would be expected to be drilled over a period of several years.

The proposed six wells on the Grinnell 41X-1well pad would be located in the northeast quarter of the northeast quarter of Section 1, Township 148N, Range 92W to access one spacing unit (1,280 acres) consisting of Sections 1 and 27 in Township 148N, Range 92W (Figure 2.9a). Almost one-half mile of existing road would require improvements while roughly 146 linear feet of new road would be constructed to access the well pad. Photographs of the proposed road alignment and well pad location are shown in Figures 2.2a and 2.3a. For the Grinnell 41X-1 well pad the first well would be named FBIR Grinnell 41X-1 with additional wells named in succession as FBIR Grinnell 41X-1B, 41X-1C, 41X-1D, 41X-1E, and 41X-1F.

The proposed six wells on the Grinnell 34X-33 well pad would be located in the southwest quarter of the southeast quarter of Section 33, Township 149N, Range 91W to access one spacing unit (1,280 acres) consisting of Sections 28 and 33 in Township 149N, Range 91W (Figure 2.9b). Approximately 357 linear feet of existing road would require improvements while roughly 315 linear feet of new road would be constructed to access the well pad. Photographs of the proposed road alignment and well pad location are shown in Figures 2.2b and 2.3b. For the Grinnell 34X-33 well pad the first well would be named FBIR Grinnell 34X-33 with additional wells named in succession as FBIR Grinnell 34X-33B, 34X-33C, 34X-33D, 34X-33E, and 34X-33F.

The proposed six wells on the GeorgeBlackHawk 21X-6 well pad would be located in the northeast quarter of the northwest quarter of Section 6, Township 148N, Range 91W to access one spacing unit (1,280 acres) consisting of Sections 6 and 7 in Township 148N, Range 91W (Figure 2.9c). Approximately 1,313 linear feet of existing road would require improvements while roughly 455 linear feet of new road would be constructed to access the well pad. Photographs of the proposed road alignment and well pad location are shown in Figures 2.2c and 2.3c. For the GeorgeBlackHawk 21X-6 well pad the first well would be named FBIR GeorgeBlackHawk 21X-6 with additional wells named in succession as FBIR GeorgeBlackHawk 21X-6B, 21X-6C, 21X-6D, 21X-6E, and 21X-6F.

For Grinnell 41X-1, Grinnell 34X-33, and GuyBlackHawk 21X-6 the initial drilling would be vertical to an approximate depth of 9,500 to 10,500 feet. Directional drilling would honor all minimum setback requirements from section lines established by the NDIC. The completed well bores would total about 20,000 to 25,000 feet at a depth of about 10,000 to 11,000 feet, including a 10,000 to 11,500 feet lateral reach in the Bakken.

The surface hole location for the initial Grinnell 41X-1 well is approximately 480 fee FEL and about 250 feet FNL in the NE¼NE¼ of Section 1 (Figure 2.9a). The bottom hole target for the initial drilling target is approximately 2,314 feet FNL and about 2,641 feet FSL in the SW¼NE¼ of Section 2. Therefore, the bottom hole target in Section 2 is approximately 2,056 feet south of and 9,825 feet west of the initial surface well. The locations of the bottom hole targets for the additional five wells, if drilled, would be different than for this first well. The bottom hole targets would be determined such that optimum reservoir development occurs within each unit and all applicable footage setbacks would be respected.

Because the additional wells would be located on the same well pads, no additional surface disturbance would occur; the analysis conducted in this EA applies to the additional five potential wells on this pad. The surface hole location for the initial Grinnell 34X-33 well is approximately 312 feet FSL and about 2,226 feet FEL in the SW¼SE¼ of Section 33 (Figure 2.9b). The bottom hole target for the initial drilling target is approximately 250 feet FNL and about 2,634 feet FEL in the NW¼NE¼ of Section 28. Therefore, the bottom hole target in Section 28 is approximately 10,041 feet north of and 461 feet west of the initial surface well. The locations of the bottom hole targets for the additional five wells, if drilled, would be different than for this first well. The bottom hole targets would be determined such that optimum reservoir development occurs within each unit and all applicable footage setbacks would be respected. Because the additional wells would be located on the same well pads, no additional surface disturbance would occur; the analysis conducted in this EA applies to the additional five potential wells on this pad.

The surface hole location for the initial GeorgeBlackHawk 21X-6 well is approximately 621 feet FNL and about 1,766 feet FWL in the NE¼NW¼ of Section 6 (Figure 2.9c). The bottom hole target for the initial drilling target is approximately 313 feet FSL and about 2,388 feet FWL in the SE¼SW¼ of Section 7. Therefore, the bottom hole target in Section 7 is approximately 9,358 feet south of and 651 feet west of the initial surface well. The locations of the bottom hole targets for the additional five wells, if drilled, would be different than for this first well. The bottom hole targets would be determined such that optimum reservoir development occurs within each unit and all applicable footage setbacks would be respected. Because the additional wells would be located on the same well pads, no additional surface disturbance would occur; the analysis conducted in this EA applies to the additional five potential wells on this pad.

Figure 2.9a: Spacing unit (1,280 acres) and bottom hole location for FBIR Grinnell 41X-1.

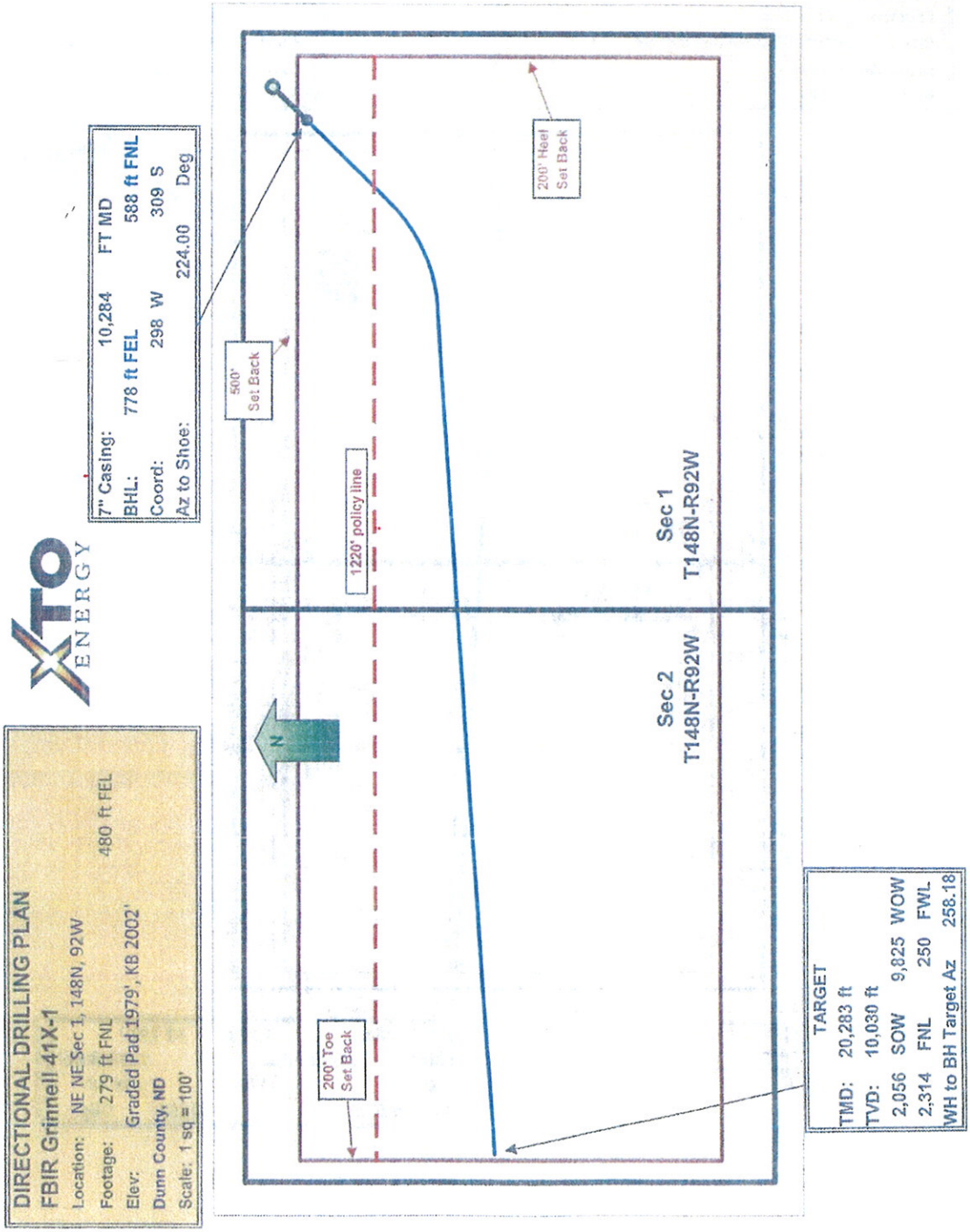


Figure 2.9b: Spacing unit (1,280 acres) and bottom hole location for FBIR Grinnell 34X-33.

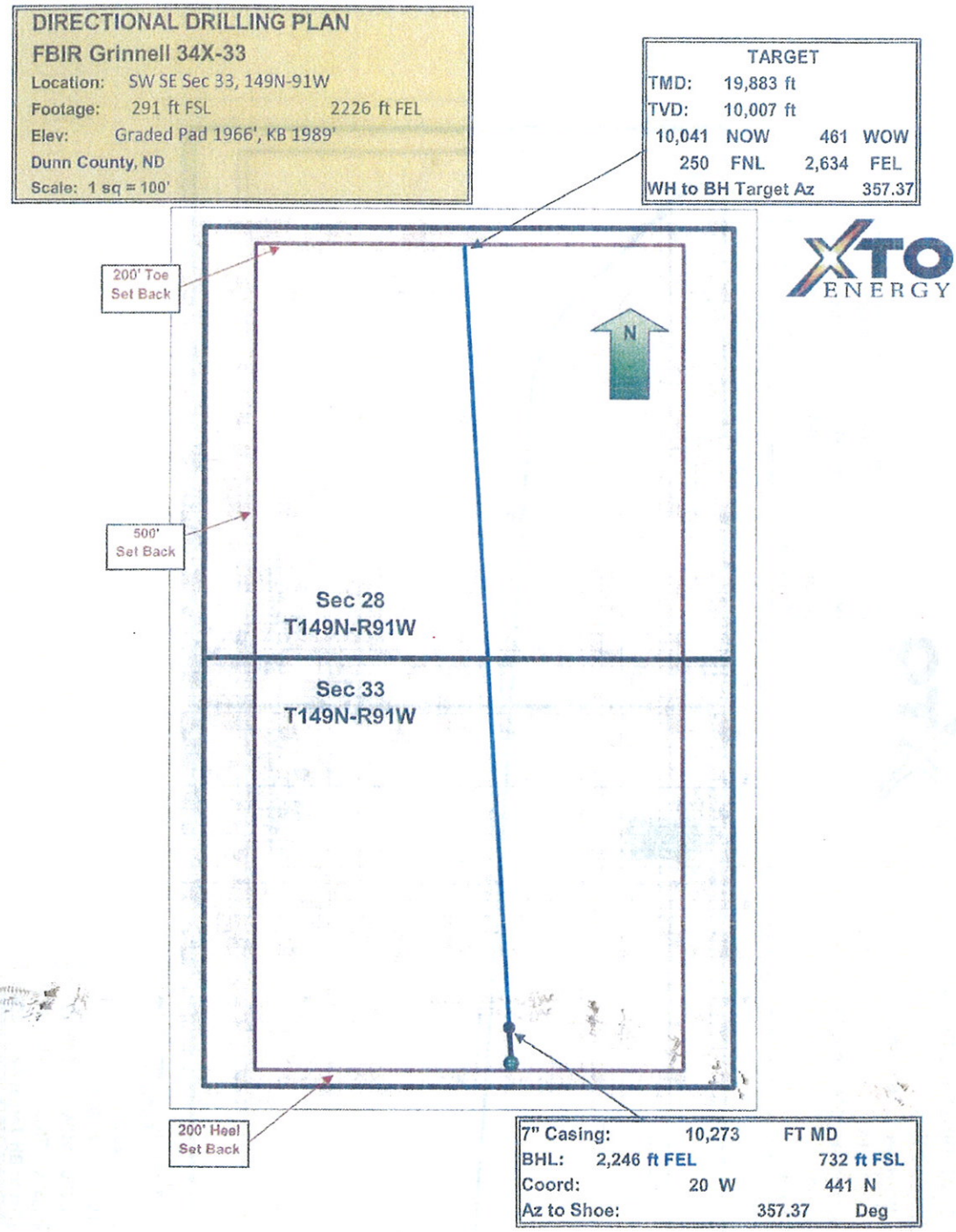
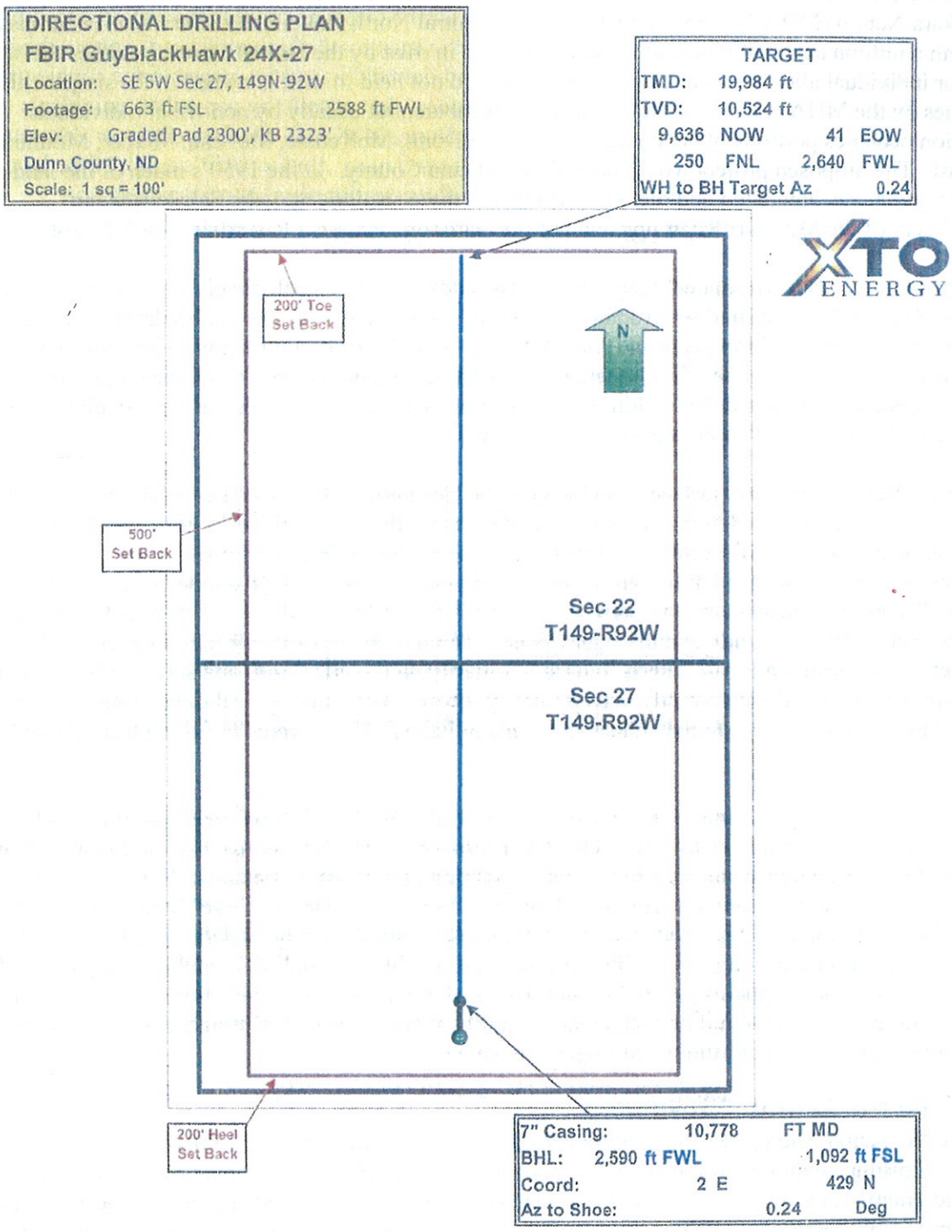


Figure 2.9c: Spacing unit (1,280 acres) and bottom hole location for FBIR GuyBlackHawk 24X-27.



3.0 The Affected Environment and Potential Impacts

The Fort Berthold Indian Reservation is the home of the Three Affiliated Tribes of the Mandan, Hidatsa and Arikara Nation (MHA Nation). Located in west-central North Dakota, the reservation encompasses more than a million acres, of which almost half are held in trust by the United States for either the MHA Nation or individual allottees. The remainder of the land not held in trust is owned in fee simple title, sometimes by the MHA Nation or individual tribal members, but usually by non-tribal individuals. The reservation occupies portions of six counties, including Dunn, McKenzie, McLean, Mercer, Mountrail and Ward. The proposed project would take place in Dunn County. In the 1950's much of the land on the Reservation was inundated and the rest divided into three sections by Lake Sakakawea (an impoundment of the Missouri River upstream of the Garrison Dam near Riverdale, North Dakota).

The proposed well pads, associated wells, and access roads would be geologically situated within the Williston Basin, where the shallow structure consists of sandstones, silts, and shales dating to the Tertiary Period (65 million to 2 million years ago), including the Sentinel Butte Formation. The underlying Bakken is a well-known source of hydrocarbons; its middle member is targeted by the proposed projects. Earlier oil/gas exploration activity within the reservation, and near the project site in particular, were technologically limited and commercially unproductive.

Much of the Reservation land surface is included in the Northern Great Plains Level III Ecoregion (Bryce et al. 1996). This unglaciated area extends south and west of the Missouri River and varies from undulating plains to highly dissected, erosional landscape of the Little Missouri Badlands. Within this ecoregion mean annual precipitation ranges between 13 and 17 inches. Mean temperatures fluctuate between -3° and 21° F in January and between 60° and 91° F in July, with 80 to 140 frost-free days each year (Bryce et al. 1996). Lands within the proposed spacing units occur from approximately 1,950 to 2,000 feet above mean sea level. These lands are primarily native grasslands and shrublands dissected by woody riparian areas and are currently used primarily for livestock grazing. All three proposed sites for the well pads are very gently sloped and situated on a hillside that is elevated (150-200 feet) above Lake Sakakawea.

The broad definition of the human environment under NEPA leads to the consideration of the following elements: air quality, public health and safety, water resources, wetland/riparian habitat, threatened and endangered species, wildlife and fisheries, soils, vegetation and invasive species, cultural resources, socio-economic conditions, and environmental justice. Potential impacts to these elements were analyzed for both the No Action and Proposed Action Alternatives. Impacts may be beneficial or harmful, direct or indirect, and short-term or long-term. The EA also analyzes the potential for cumulative impacts and ultimately makes a determination as to the significance of any impacts. In the absence of significant negative consequences, it should be noted that a significant *benefit* from the project does *not* in itself require preparation of an Environmental Impact Statement.

3.1 The No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed, drilled, installed, or operated. Existing conditions would not be impacted for the following critical elements: air quality, public health and safety, water resources, wetland and riparian habitat, threatened and endangered species, wildlife and fisheries, soils, vegetation and invasive species, and cultural resources. There would be no project-related ground disturbance, use of hazardous materials, or trucking of product to collection areas. Surface disturbance, deposition of potentially harmful biologic material, trucking and other traffic would not change from current levels. Economic benefits to both tribe and many tribal members would remain at the currently depressed levels if exploration and commercial development of available resources were

abandoned. Loss of employment and royalty income could affect tribal and individual economies and planning on a large scale.

3.2 Air Quality

This section describes the existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for air quality resources in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

The North Dakota Department of Health (NDDH) operates a network of ambient air quality monitoring stations. The closest stations that bracket the project site and monitor a full suite of air quality constituents are Dunn Center to the south, TRNP-NU to the west, Lostwood NWR to the north, and Beulah North to the southeast (NDDH 2010). Wind directions are predominantly from the northwest or southeast at Dunn Center and TRNHP-NU, from the south-southwest or northwest at Lostwood, and from northwest, southwest, or southeast at Beulah North (NDDH 2010). The Dunn Center monitoring station is closest to the Grinnell 41X-1, Grinnell 34X-33 and GeorgeBlackHawk 21X-6 proposed project sites and is located roughly 30 air-miles to the south-southwest.

Criteria pollutants tracked under the National Ambient Air Quality Standards (NAAQS) of the *Clean Air Act* and the State Ambient Air Quality Standards of North Dakota (SAAQS) include sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), inhalable particulate matter (PM_{10}), and continuous fine inhalable particulate matter (PM_{fine}). Lead (Pb) and carbon monoxide (CO) are not monitored by any nearby monitoring stations. The SAAQS are generally equivalent to, or more stringent than, the NAAQS for most pollutants. The existing air quality at the four monitoring stations did not exceed SAAQS air quality standards in 2009 (Table 3.2). In fact, in 2009 North Dakota was one of thirteen states that met standards for all criteria pollutants (NDDH 2010). The state also met standards for fine particulates and the eight-hour ozone standards established by the U.S. Environmental Protection Agency (EPA) (NDDH 2010).

Table 3.2: ***Comparison of the North Dakota state ambient air quality standards at four monitoring stations.***[1]

Pollutant (unit[2])	Averaging Period	SAAQS Standard	Monitoring Station			
			Dunn Center	TRNP-NU	Lostwood NWR	Beulah North
SO_2 (ppb)	1-Hour	273	20.1	20.3	57.1	41
	24-Hour	99	6.0	4.0	15.0	7
	Annual Arithmetic Mean	23	0.5	0.6	1.7	1.6
NO_2 (ppb)	Annual Arithmetic Mean	53	1.5	1.0	1.7	2.8
O_3 (ppb)	One exceedance per year (1-Hour)	120	57	58	60	60
$PM_{2.5}$ ($\mu g/m^3$)	24-Hour	35 (NAAQS)	15.0	14.9	18.1	15.0
	Annual Mean	15 (NAAQS)	3.4	3.0	3.8	3.4
PM_{10} ($\mu g/m^3$)	24-Hour	150	54.0	44	31	34.0
	Annual Mean	50	11.3	9.2	8.5	11.0
CO (ppm)	1-Hour	9	--	--	--	--
	8-Hour	35	--	--	--	--
Pb ($\mu g/m^3$)	3-Month	1.5	--	--	--	--

[1] Source: NDDH (2010).

[2] ppb = Parts per billion; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter

The *Clean Air Act* mandates prevention of significant deterioration in designated attainment areas. Class I areas are of special national significance and include national parks greater than 6,000 acres in size, national monuments, national seashores, and federally designated wilderness areas larger than 5,000 acres and designated prior to 1977. Both visibility impairment and increases in pollutant concentrations are capped. There is a Class I airshed at Theodore Roosevelt National Park, which covers approximately 110 square miles of land in three units within the Little Missouri National Grassland between Medora and Watford City. This Class I airshed is located roughly 45 air-miles west of the project site. The project site can be considered a Class II attainment airshed, which affords it a lower level of protection from significant deterioration.

The EPA has Title V permitting responsibilities on the Reservation. Construction would generate temporary and nearly undetectable gaseous emissions of PM_{10} and SO_2. Construction would generate levels of NO_x, CO, and volatile organic compounds (VOCs) that range from nearly undetectable to detectable depending upon how much is vented or combusted. Impacts to air quality in the "near field" during construction would not be anticipated due to the implementation of dust control measures, and use of low sulfur diesel in construction equipment as necessary. No detectable or long-term impacts on air quality or visibility would be expected within the airsheds of the reservation, park, or state. The Title V permitting process is on-going. In the event XTO is located onsite for an extended period of time, and where generally accepted methods of emission reduction techniques are available, the operator would take the necessary steps to reduce and/or control those air emissions, by methods such as, dust control, low emission engines (as available) or engines that meet Federal emission standards, low sulfur or other fuels meeting federal specifications, vapor recovery units, and/or combustion devices, and would obtain all necessary permits required by State or Federal Agencies.

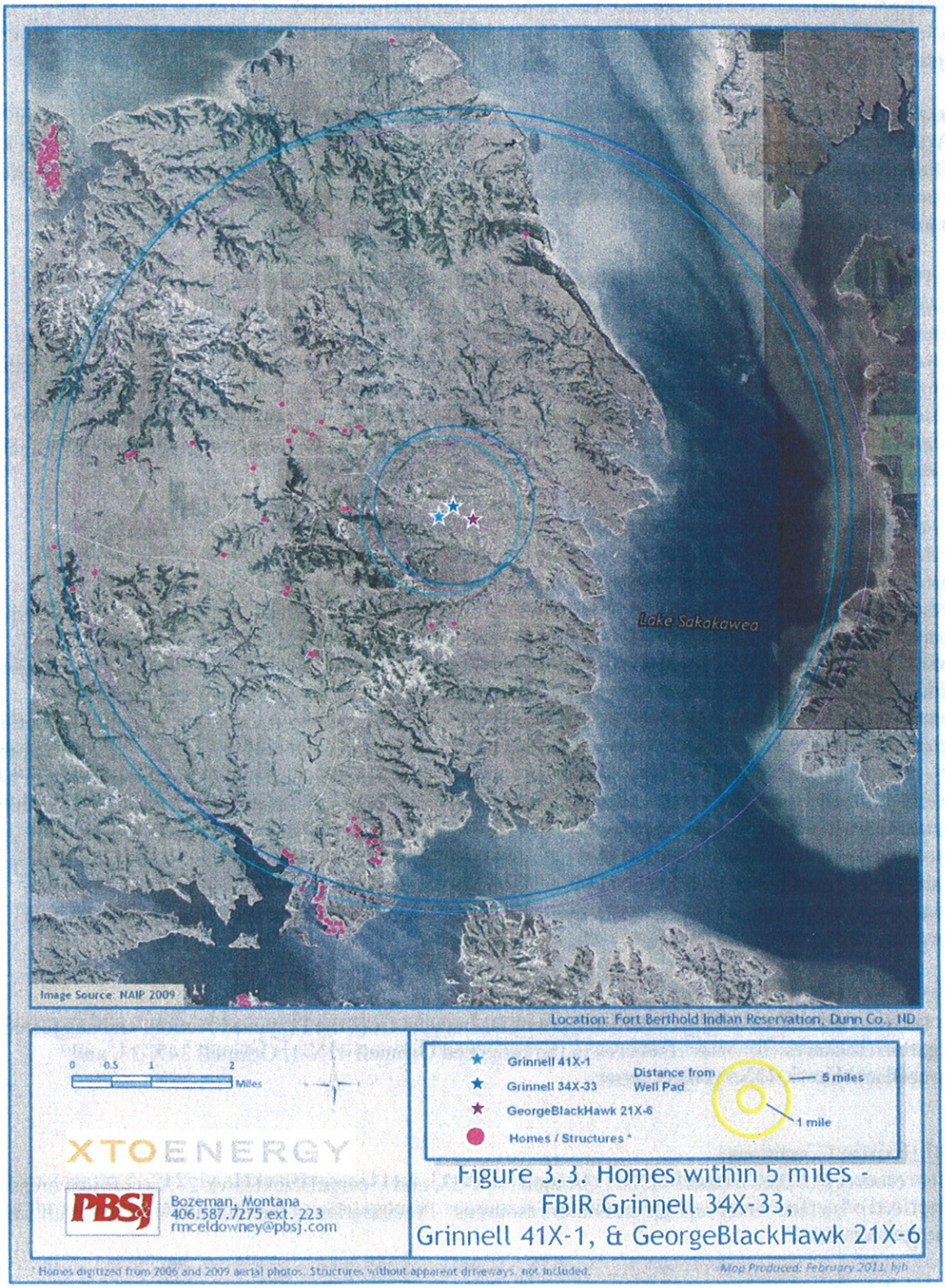
3.3 Public Health and Safety

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for public health and safety resources in the project area.

Health and safety concerns include naturally occurring toxic gases, hazardous materials used or generated during installation or production, and traffic hazards from heavy drill rigs and tankers. Hydrogen sulfide (H_2S) is a naturally occurring gas that at low concentrations has a 'rotten egg odor'. For this reason, it is often referred to as 'sour gas'. It is extremely toxic in concentrations above 500 parts per million (ppm); it has not been found in measurable quantities in the Bakken. Before reaching the Bakken, drilling would penetrate the Mission Canyon Formation, which is known to contain varying concentrations of hydrogen sulfide (H_2S). Release of H_2S at dangerous concentrations is considered very unlikely, but H_2S Contingency Plans submitted to the BLM establish precautions and emergency response plans for both the drilling crew and the public. These plans comply fully with relevant portions of *Onshore Oil and Gas Order 6*. Precautions include automated sampling and alarm systems operating continuously at multiple locations on the well pad. No direct impacts from H_2S are anticipated.

Interpretation of 2009 aerial photography revealed no residences within a one-mile radius and 54 residences within a five-mile radius of the proposed Grinnell 41X-1 well pad (Figure 3.3). The four closest homes occur at a distance of 1.17 to 1.39 miles west and south from the proposed well pad (Figure 3.3).

Interpretation of 2009 aerial photography revealed no residences within a one-mile radius and 51 residences within a five-mile radius of the proposed Grinnell 34X-33 well pad (Figure 3.3). The four closest homes occur at a distance of 1.36 to 1.54 miles west and south from the proposed well pad (Figure 3.3).


Lake Sakakawea
Image Source: NAIP 2009
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 0.5 1 2
Miles
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Grinnell 41X-1
Grinnell 34X-33
GeorgeBlackHawk 21X-6
Homes / Structures *
Distance from Well Pad
5 miles
1 mile
Figure 3.3. Homes within 5 miles - FBIR Grinnell 34X-33, Grinnell 41X-1, & GeorgeBlackHawk 21X-6
* Homes digitized from 2006 and 2009 aerial photos. Structures without apparent driveways, not included.
Map Produced: February 2011, bjh

Interpretation of 2009 aerial photography revealed no residences within a one-mile radius and 54 residences within a five-mile radius of the proposed GeorgeBlackHawk 21X-6 well pad (Figure 3.3). The four closest homes occur at a distance of 1.35 to 1.65 miles east and south from the proposed well pad (Figure 3.3).

Since the prevailing wind directions are from the west, northwest, or southeast, according to the 2009 SAAQM data in Dunn Center (NDDH 2010), these residences should not sense odors or noise from either of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21x-6 well pads. The majority of residences are scattered across the landscape to the northwest, west, and southwest of the three proposed well pads.

The EPA specifies chemical reporting requirements under Title III of the *Superfund Amendments and Reauthorization Act* (SARA) of 1986, as amended. No materials used or generated by this project for production, use, storage, transport, or disposal are on either the SARA list or on EPA's list of extremely hazardous substances in 40 CFR 355. Project design and operational precautions mitigate against impacts from toxic gases, flaring, hazardous materials and traffic. All operations, including flaring, would conform to instructions from BIA fire management staff. Impacts are considered minimal, unlikely, and insignificant. No laws, regulations or other requirements have been waived; no compensatory mitigation measures are required.

At the well site and access road any adverse impacts from traffic would be temporary and then intermittent. Noise, fugitive dust, and traffic hazards would be present for about 60 days during construction, drilling and well completion, and would then diminish sharply during commercial operations. Initially, approximately 50 trips to and from the site over several days could be expected to transport the drill rig and associated equipment to the site. A similar number of trips would also be needed to remove the drill rig and other temporary facilities once the drill rig is removed from the site. Additionally, relatively more activity could be expected at the site during each successive drilling operation (up to 6 wells) at the well pads than during on-going production. Actual potential production is unknown at this time, but other wells in the area have initially produced 500 to 1,000 barrels of oil per day, as well as roughly 200 barrels of water per day. Assuming that an oil tanker can typically haul 140 barrels of oil per load and a water tanker 110 barrels of water per load, production service may initially require three to seven oil tankers and two to three water tankers per day. Over time, as production decreases this may decline to two to three oil tankers and one water tanker per day. Dust would be suppressed as necessary or as required by the BIA to reduce impacts, both during construction and production. Contingent upon consent of the landowner, XTO Energy is proposing to install a fence around the perimeter of the well pad.

3.4 Water Resources

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for water resources in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

3.4.1 Existing Conditions

Water resources in the Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas are comprised of surface water and groundwater resources. Precipitation is the ultimate source for all water in the project area.

3.4.1.1 Precipitation

Based on 58 years of data at the closest active weather station (Keene 3 S, ND) to the project area, the average annual precipitation in the area is 15.67 inches (in) (HPRCC 2010a). Precipitation in May, June,

and July typically accounts for roughly 50% of the annual precipitation, with the month of June averaging the highest precipitation (3.29 in). Annual snowfall averages 34.80 in, with the majority of snow falling between November and March. December and January typically have the most snowfall, averaging 6.4 and 7.3 in, respectively (HPRCC 2010a). During the 2010 growing season (May – September), evapo-transpiration typically ranged between 0.10 in and 0.42 in per day (HPRCC 2010b).

3.4.1.2 General Surface Water Considerations

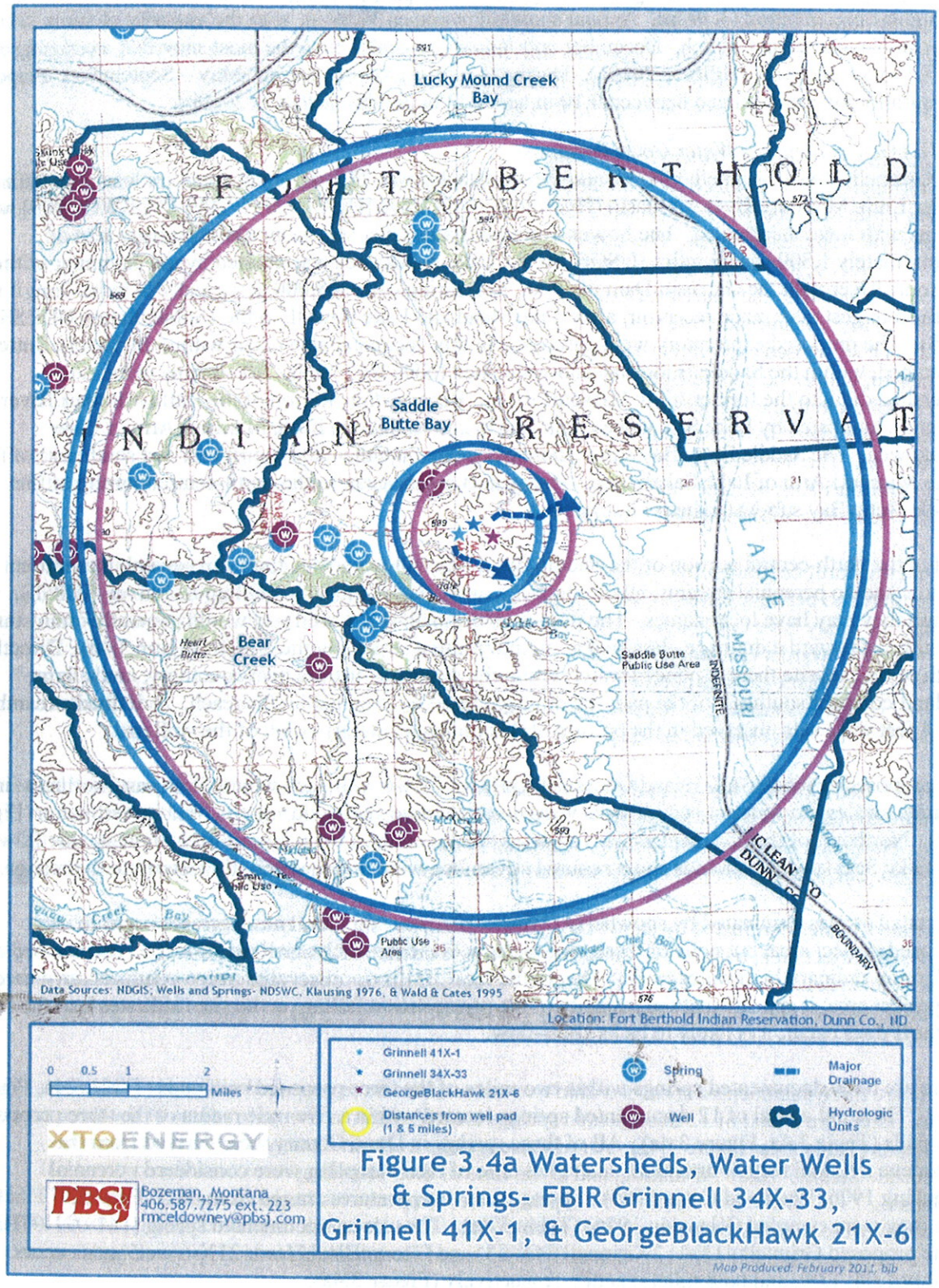
The Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas are located within the Lower Little Missouri River sub-basin (Hydrologic Unit Code [HUC] #10110205) (NDSWC 2009) where it joins with Lake Sakakawea. The Lower Little Missouri River sub-basin has a drainage area of approximately 1,800 square miles (USGS 2010). Lake Sakakawea was created by the damming of the Missouri River with the Garrison Dam in 1956. Measuring over 368,000 acres and 178 miles long it is the third largest man-made reservoir, after Lake Mead and Lake Powell, in the United States (NDLSSP 2008). The proposed exploratory wells discussed in this document also occur within the Saddle Butte watershed, within the Saddle Butte Bay sub-watershed (NDSWC 2009). All streams in this sub-watershed drain to the former Little Missouri River. Because this portion of the Little Missouri River is currently inundated by Lake Sakakawea, this area is now called the Little Missouri Arm of Lake Sakakawea. The Saddle Butte Bay sub-watershed occurs on either side (northwest and southeast) of the Little Missouri Arm of Lake Sakakawea. The project areas occur on the north-central portion of the Saddle Butte Bay sub-watershed (Figure 3.4a).

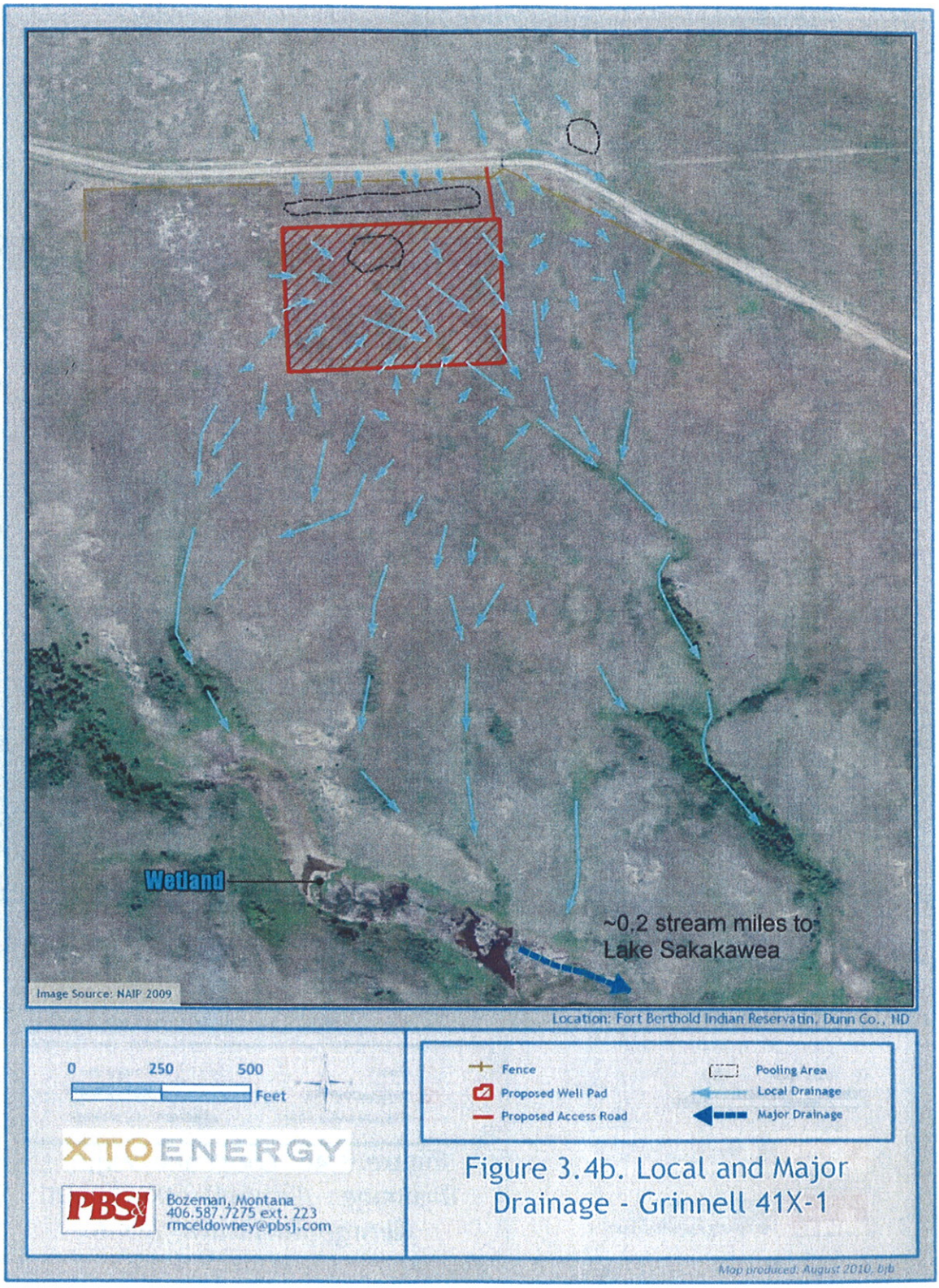
Within the north-central portion of the Saddle Butte Bay sub-watershed there are several intermittent streams and no perennial streams, all of which are unnamed by the U.S. Geological Survey (USGS), though they may have local names. The proposed Grinnell 41X-1 well pad would generally drain south to southeast toward a drainage classified as an intermittent stream by the USGS (Figure 3.4b). Directly south of the pad site there is ponded water within the drainage, historic beaver activity, and a large wetland complex southeast of the pad; the drainage may be perennial in this reach. A defined streambed, 3 to 4 feet wide was observed in the portion of this drainage directly south of the well pad.

The proposed Grinnell 34X-33 and GeorgeBlackHawk 21X-6 well pads would drain east-northeast into separate swales; no water or scour marks were noted in these swales during the field investigation (Figure 3.4c). Northeast of the project sites the vegetated swales connect to an intermittent drainage that flows into Lake Sakakawea; wetlands and a scoured streambed were noted within this intermittent drainage.

Vegetated swales dominated by snowberry (*Symphoricarpos* spp.) and mesic grasses occur in each proposed project area, but none of these swales show evidence of channelized flow (i.e., defined bed and bank or an ordinary high water mark). Due to the lack of rills or observable micro-channels anywhere in the project area, it appears that the majority of the precipitation falling on the site infiltrates into the soil. If runoff does occur, it is likely to be as sheet-flow.

There are three documented springs within two miles of the three proposed well pads (Table 3.4a, Figure 3.4a). There are a total of 12 documented springs located within a five mile radius of the three proposed well pads (Table 3.4a, Figure 3.4a). All of these springs in Dunn County were derived from the Paleocene Sentinel Butte Formation, and at the time of their sampling were considered perennial (Klausing 1976, Wald and Cates 1995). Spring water temperatures ranged from 42.5° F to 52.7° F at the time they were sampled (Klausing 1976) (Table 3.4a). The closest documented spring (148-091-07BAA) to the proposed Grinnell 41X-1, 2-Grinnell 34X-33, and GeorgeBlackHawk 21X-6 well pads occurs roughly 1.04, 1.09, and 0.88 mile(s) south, respectively (Figure 3.4a).


Lucky Mound Creek Bay
F O R T B E R T H O L D
I N D I A N R E S E R V A T
Saddle Butte Bay
Bear Creek
Saddle Butte Public Use Area
MISSOURI
LAKE
INDEPENDENCE
Public Use Area
BOUNDARY
RIVER
Data Sources: NDGIS; Wells and Springs- NDSWC, Klausing 1976, & Wald & Cates 1995
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 0.5 1 2
Miles
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Grinnell 41X-1
Grinnell 34X-33
GeorgeBlackHawk 21X-6
Distances from well pad (1 & 5 miles)
Spring
Well
Major Drainage
Hydrologic Units
Figure 3.4a Watersheds, Water Wells & Springs- FBIR Grinnell 34X-33, Grinnell 41X-1, & GeorgeBlackHawk 21X-6
Map Produced: February 2011, bjb


Wetland
~0.2 stream miles to Lake Sakakawea
Image Source: NAIP 2009
Location: Fort Berthold Indian Reservatin, Dunn Co., ND
0
250
500
Feet
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Fence
Proposed Well Pad
Proposed Access Road
Pooling Area
Local Drainage
Major Drainage
Figure 3.4b. Local and Major Drainage - Grinnell 41X-1
Map produced: August 2010, bjb

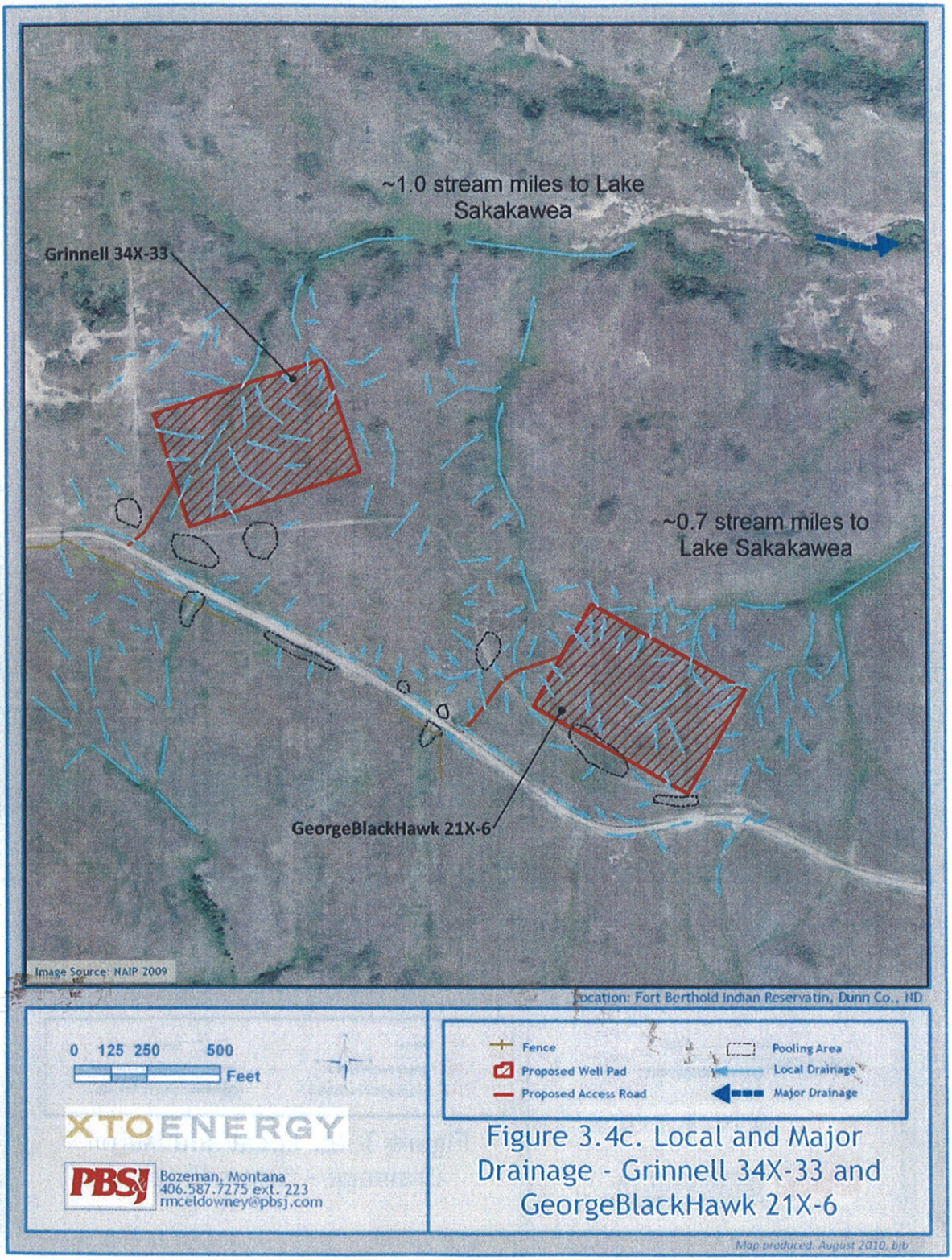

~1.0 stream miles to Lake Sakakawea
Grinnell 34X-33
~0.7 stream miles to Lake Sakakawea
GeorgeBlackHawk 21X-6
Image Source: NAIP 2009
Location: Fort Berthold Indian Reservatin, Dunn Co., ND
0 125 250 500
Feet
Fence
Proposed Well Pad
Proposed Access Road
Pooling Area
Local Drainage
Major Drainage
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Figure 3.4c. Local and Major Drainage - Grinnell 34X-33 and GeorgeBlackHawk 21X-6
Map produced: August 2010, bjb

Table 3.4a: ***Summary information for documented springs located within five miles of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.***

Spring Identification	Date of Sample	Lithology	Flow Rate (gal/min)	Specific Conductance (µmhos/cm)	Temp. (°F)	Distance from Well Pad Center (mile)[2]		
						Grinnell 41X-1	Grinnell 34X-33	George BlackHawk 21X-6
148-091-07BAA	8/3/1972	--	3	1,800	46.4	1.04	1.09	0.88
148-092-03ABA	8/3/1972	--	6	1,350	49.1	2.25	2.44	2.67
148-092-04CBD	8/8/1950	Coal	36	447	46.4	3.79	3.99	4.20
148-092-11AAC	8/3/1972	Coal	8	461	46.4	1.53	1.74	1.83
148-092-11ACA	8/8/1950	Coal	2.9	550	49.1	1.71	1.93	2.01
148-092-26ACA	8/1/1972	Coal	2	655	42.5	4.36	4.54	4.46
149-091-08AAA	8/16/1972	--	6	1,880	49.1	--	4.90	--
149-091-16BBB	8/16/1972	Coal	5	1,800	51.8	3.94	3.83	4.04
149-091-16BCB	8/16/1972	Coal	6	1,250	52.7	3.68	3.58	3.79
149-091-16BCCC	8/16/1972	Coal	4	1,400	49.1	3.59	3.49	3.70
149-092-25CDC	8/2/1972	--	8	700	50	3.30	3.44	3.72
149-092-35BDA	11/08/1950, 8/2/1972	Coal	80	825 725	50	4.09	4.25	4.52

[1] USGS 7.5 minute topographic quadrangle.
Sources: Armstrong 1969; Klausing 1976; Wald and Cates 1995; NDSWC 2010.

3.4.1.2 General Groundwater Considerations

Aquifers in Dunn County occur in five main pre-glacial formations, including the Upper Cretaceous Fox Hills and Hell Creek formations and the Tertiary Cannonball-Ludlow, Tongue River and Sentinel Butte Formations (Table 3.4b). Aquifers in the Fox Hills and Hell Creek formations occur at the deepest depths, while aquifers in the Tongue River and Sentinel Butte formations occur at shallower depths. Glacial drift aquifers also occur in Dunn County and overlay the Sentinel Butte aquifer. While smaller glacial drift aquifers may occur in the project vicinity, the only large, mapped aquifer in the area and on the south side of the lake is located roughly 14.5 miles west-southwest of the project area (NDSWC 2010). The Goodman Creek Aquifer is located approximately 11.8 miles south of the project area (Klausing 1979). Two other mapped aquifers occur closer to the project area than the other two mentioned, but are on the far (north) side of the lake from the project area (NDSWC 2010).

Table 3.4b: ***Characteristics of pre-glacial aquifers occurring in Dunn County, North Dakota.***

Formation Name	Lithology	Max. Thickness (ft)	Depth to Top of Formation (ft)	Water Yield (gpm)
Sentinel Butte	Clay, claystone, shale, sandstone, siltstone, and lignite.	670	0 - 700	5 – 100 (sandstone) 1 – 200 (lignite)
Tongue River	Clay, claystone, shale, sandstone, siltstone, and lignite.	490	230 - 750	<100

Table 3.4b (continued): ***Characteristics of pre-glacial aquifers occurring in Dunn County, North Dakota.***

Formation Name	Lithology	Max. Thickness (ft)	Depth to Top of Formation (ft)	Water Yield (gpm)
Undifferentiated Cannonball-Ludlow	Cannonball - marine sandstone, clay, shale, and siltstone. Ludlow - continental siltstone, sandstone, shale, clay, and lignite.	660	570 – 1,130	<50
Hell Creek	Siltstone, sandstone, shale, claystone, and lignite	300	1,150 – 1,730	5 - 100
Fox Hills	Sandstone, shale, and siltstone	300	1,330 – 1,960	<200 - 400

Source: Klausing 1979.

There are eight documented, water-producing wells within a 5-mile radius of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 well pads (Figure 3.4a, Table 3.4c). The closest documented well (149-091-33BCC) is located 0.72 mile northeast of Grinnell 41X-1, 0.73 mile northwest of Grinnell 34X-33, and 1.02 miles northwest of GeorgeBlackHawk 21X-6 well pads.

Table 3.4c: ***Information on locations of documented water wells that occur within a five-mile radius of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 well pads.***

Well Identification	DISTANCE (mile)		
	Grinnell 41X-1	Grinnell 34X-33	GeorgeBlackHawk 21X-6
149-091-33BCC	0.72	0.73	1.02
148-092-03ABA	2.21	2.40	2.64
148-092-11CCB	2.46	2.68	2.76
148-092-24CCCA	3.85	4.01	3.91
148-092-24CCCB	3.90	4.06	3.97
148-092-23CCA	4.08	4.27	4.23
148-092-06AAD	4.97	--	--

Sources: Klausing (1976); Wald and Cates (1995).

3.4.1.4 Existing Onsite Drainage

The proposed Grinnell 41X-1 well pad and access road would generally drain south and east into swales vegetated primarily with shrubs and grasses (Figure 3.4b); there is no evidence of scour or water marks within the swales. The southwest corner of the pad would drain south-southwest into an intermittent drainage, which then drains eastward to Lake Sakakawea (Figure 3.4b). Following predicted flow paths, the intermittent drainage is roughly 1,190 feet south of the southwest corner of the pad site. The flow path from the southeast corner of the pad connects to the eastern-most arm of Saddle Butte Bay on Lake Sakakawea; the flow distance is approximately 2,065 feet, or about 0.37 air-mile.

The proposed Grinnell 34X-33 and GeorgeBlackHawk 21X-6 well pads and access roads would generally drain north to northeast into swales vegetated primarily with shrubs and grasses (Figure 3.4c); there is no evidence of scour or water marks within the swales. Both swales connect into the same intermittent drainage. Flow distances from the Grinnell 34X-33 and GeorgeBlackHawk 21X-6 project sites to the intermittent drainage are approximately 1,950 and 1,600 feet, respectively (Figure 3.4c). Distances from

Grinnell 34X-33 and GeorgeBlackHawk 21X-6 well pad sites to Lake Sakakawea are 1.1 and 0.80 stream mile(s) (0.87 and 0.67 air miles), respectively.

3.4.2 Water Resources Impacts

Construction and reclamation techniques included in the three APDs would minimize potential for impacts to both groundwater and surface water. The proposed project site has been sited to minimize the disruption of area drainages. Due to the proximity of the well pad to Lake Sakakawea, potential impacts to the surface water quality of the lake is a concern, but is considered unlikely because of onsite containment measures and spill prevention/clean-up protocols that would be used. Roadway engineering and erosion control measures would mitigate the migration of sediment downhill or downstream. No substantial increases in runoff or impacts to surface waters are expected.

The water quality of local aquifers would be protected by cementing the casing across aquifer zones. The cuttings and catch-all pits would be lined with an impermeable barrier. For these reasons the dewatering or contamination of local springs or groundwater resources would be unlikely. No significant impacts to surface water or groundwater are expected as a result of the proposed actions.

3.4.3 Water Resources Mitigation

The well bore of each well would be drilled with water to a point below the base of the Fox Hills formation prior to setting casing to prevent contamination of the formation. Surface casing would be cemented in place to a depth of about 1,500 to 2,500 feet, isolating aquifers in the Fox Hills Formation and extending a minimum of 50 feet into the underlying Greenhorn formation. Intermediate casing would extend from the surface and be cemented between about 4,000 and 13,000 feet in depth to isolate potentially productive water and hydrocarbon bearing zones. A semi-closed loop system would be used for all drilling activities. Pits would be lined with an impermeable liner. The tops of the fill slopes would be bermed (2 feet) to prevent runoff and a silt fence placed at the bottom of fill slopes to prevent offsite sedimentation. Where feasible, a drainage ditch would be installed on the up-gradient side of cuts to prevent surface runoff from entering the pad sites. Any produced water would be captured in tanks on site and periodically trucked to an approved disposal site. The frequency of trucking of either oil or water would depend upon production rates. The BIA and BLM would monitor all operations and record keeping at their discretion. Evidence of groundwater contamination related to the project would result in a stop work order until all appropriate measures were identified and implemented. No applicable laws or regulations would be waived; no compensatory mitigation measures are required to protect surface water or groundwater.

3.5 Wetland and Riparian Habitats

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for wetland and riparian resources in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

National Wetland Inventory maps, maintained by the U.S. Fish and Wildlife Service (USFWS), did not identify any wetlands within the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project sites (USFWS 2011). Physical inventories conducted on July 13-14, 2010 confirmed that there are no wetland habitats within the proposed well pads and access routes. One potential wetland occurs near the GeorgeBlackHawk well pad, but on the south side of the existing access road (Figure 3.7b). This potential wetland was observed to be isolated and likely non-jurisdictional. Historic/inactive beaver dams containing wetland habitats occur in the main drainage south of the proposed Grinnell 41X-1 well pad and connects to Lake Sakakawea (Figure 3.7b). Riparian habitat is not present within the proposed well pads and access routes; however, they do occur in near-by drainages (Figures 3.7b). No direct or indirect impacts to wetland or riparian habitats would occur at the Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 well pads and access roads as a result of the proposed action.

3.6 Threatened, Endangered, and Candidate Species

This section describes existing conditions, the potential impacts from the Proposed Action, and suggested mitigation measures for threatened and endangered species in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

3.6.1 Existing Conditions

Threatened and endangered (TE) plant and animal species are designated by the USFWS under the guidance of the *Endangered Species Act*. Based on the USFWS (2010b) list of *County Occurrence of Endangered, Threatened, and Candidate Species and Designated Critical Habitat in North Dakota*, range/habitat descriptions found in technical literature, North Dakota Natural Heritage Program database searches for the FBIR (NDPR 2010), and an interview with the Fort Berthold Fish & Game Director (Poitra 2008 and 2010), the following eight species were considered with respect to this project (Table 3.6a).

The North Dakota Natural Heritage Program biological conservation database had no known historical or current occurrences of plant or animal species of concern within the project area (NDPR 2010). Based on this information, available reports, conversations with a local biologist, and the absence of critical, essential, or designated habitat, the likelihood of listed species to occur in the project area range from unknown to unlikely to none.

Table 3.6: ***List of threatened, endangered, and candidate species for Dunn County, North Dakota.***

Common Name	Scientific Name	Designation	Critical Habitat
Black-footed Ferret	*Mustela nigripes*	Endangered	No
Gray Wolf	*Canis lupus*	Threatened	No
Interior Least Tern	*Sterna antillarum*	Endangered	No
Piping Plover	*Charadrius melodus*	Threatened	Yes
Whooping Crane	*Grus Americana*	Endangered	No
Pallid Sturgeon	*Scaphirhynchus albus*	Endangered	No
Dakota Skipper	*Hesperia dacotae*	Candidate	No
Sprague's Pipit	*Anthus spragueii*	Candidate	No

***Black-footed ferret (Mustela nigripes)*: Endangered**

Black-footed ferrets have not been documented on the FBIR (Poitra 2008; NDPR 2010). Black-footed ferrets primarily feed on prairie dogs (*Cynomys* spp.) and use prairie dog burrows for shelter (MTNHP 2010). Black-footed ferrets have not been documented on the FBIR (Poitra 2008; NDPR 2010). Inventories conducted within the Grinnell 41X-1, Grinnell 34X-33, and George BlackHawk 21X-6 project sites on July 13-14, 2010 did not find any active or inactive prairie dog colonies. Impacts to black-footed ferrets are not expected, given the lack of occurrence, food source, and habitat.

***Gray wolf (Canis lupus)*: Threatened**

The project area does not contain preferred gray wolf habitat or a suitable prey base to sustain a permanent pack. Reported occurrences of gray wolves on the FBIR are infrequent; about 1-2 sightings occur each year near the Little Missouri River, which is west of the FBIR (Poitra 2010). No established packs have been documented or are suspected to occur on the FBIR (Poitra 2010; NDPR 2010). It is highly unlikely that wolves would colonize the project area, given its poor wolf habitat, unreliable food supplies, and the long distance from known populations in Minnesota, Canada, Montana, and Wyoming. No impacts to gray wolves are expected within the project site.

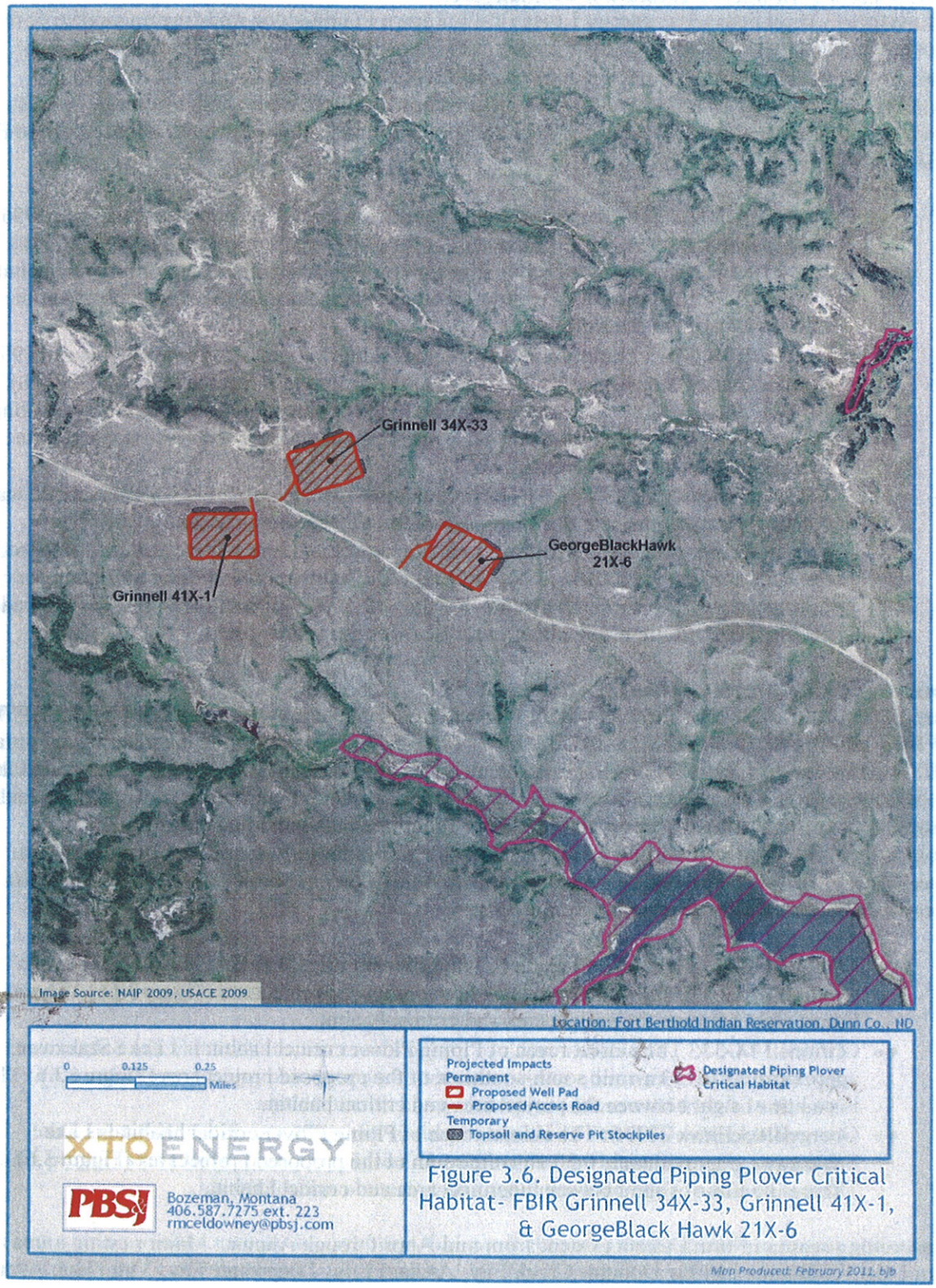
***Interior Least Tern (Sterna antillarum)*: Endangered**
In the northern United States, the Interior Least Tern is known to nest along midstream sandbars of the Missouri and Yellowstone Rivers (USFWS 2008). The breeding season extends from May through August, with a nesting season from mid-June to mid-July in North Dakota (USFWS 2008). Lake Sakakawea is not a major nesting area for Least Terns; however, tern nesting does occur in Douglas Creek Bay, Elbowwoods Bay, Deepwater Bay, Van Hook Arm, Hofflund Bay, and Tobacco Garden Bay (USACE 2007).

- Grinnell 41X-1: The closest and most recent known Least Tern nest site was in 1995 on Independence Point, 4.8 air-miles north of the proposed project area (USACE 2010). The July 13-14, 2010 inventories found no sightings or potential nesting or foraging habitats within a 0.5 mile radius of the proposed well pad and access road. No impacts to the Interior Least Tern are expected.
- Grinnell 34X-33: The closest and most recent known Least Tern nest site was in 1995 on Independence Point, 4.6 air-miles north of the proposed project area (USACE 2010). The July 13-14, 2010 inventories found no sightings or potential nesting or foraging habitats within a 0.5 mile radius of the proposed well pad and access road. No impacts to the Interior Least Tern are expected.
- GeorgeBlackHawk 21X-6: The closest and most recent known Least Tern nest site was in 1995 on Independence Point and at the mouth of Deepwater Creek Bay (2005), approximately 4.8 and 4.7 air-miles north and northeast, respectively, of the proposed project area (USACE 2010). The July 13-14, 2010 inventories found no sightings or potential nesting or foraging habitats within a 0.5 mile radius of the proposed well pad and access road. No impacts to the Interior Least Tern are expected.

***Piping Plover (Charadrius melodus)*: Threatened**
Piping Plover critical habitat for the Northern Great Plains population was designated by the USFWS (67 FR 57638) in September 2002 (USACE 2007). Designated areas of critical habitat include prairie alkali wetlands and adjacent shorelines, river channels, sandbars, islands, reservoirs, and inland lakes, and sparsely vegetated shorelines, peninsulas, and islands associated with reservoirs and inland lakes. Piping Plover critical habitat supports all life history requirements including courtship, nesting, foraging, sheltering, brood-rearing, and dispersal habitats. Piping Plover nest on barren sand and gravel shores of islands, lakes, and rivers along the Missouri River in North Dakota (USFWS 2009a). No plover habitat occurs within the proposed project site.

- Grinnell 41X-1: The closest reach of Piping Plover critical habitat is Lake Sakakawea, approximately 0.37 air-mile southeast of the proposed project area (Figure 3.6). There is no line of sight between the project area and critical habitat.
- Grinnell 34X-33: The closest reach of Piping Plover critical habitat is Lake Sakakawea, approximately 0.43 air-mile south-southeast of the proposed project area (Figure 3.6). There is no line of sight between the project area and critical habitat.
- GeorgeBlackHawk 21X-6: The closest reach of Piping Plover critical habitat is Lake Sakakawea, approximately 0.30 air-mile south of the proposed project area (Figure 3.6). There is no line of sight between theproject area and critical habitat.

The breeding season in North Dakota extends from mid-April through August. Major nesting areas within Lake Sakakawea include Douglas Creek Bay, Arikara Bay, Deepwater Bay, Van Hook Arm, Van Hook islands, Hofflund Bay, Little Egypt, Red Mike Bay, Renner Bay, and the northeast part of Mallard Island through DeTrobriand Bay (USACE 2007). Minor plover nesting areas include Elbowwoods Bay,


Grinnell 34X-33
GeorgeBlackHawk
21X-6
Grinnell 41X-1
Image Source: NAIP 2009, USACE 2009
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0
0.125
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Miles
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Projected Impacts
Permanent
Proposed Well Pad
Proposed Access Road
Temporary
Topsoil and Reserve Pit Stockpiles
Designated Piping Plover
Critical Habitat
Figure 3.6. Designated Piping Plover Critical Habitat- FBIR Grinnell 34X-33, Grinnell 41X-1, & GeorgeBlack Hawk 21X-6
Map Produced: February 2011, bjb

Beacon Island, White Earth Bay, Tobacco Garden Bay, Beacon Point, Antelope Creek, Independence Point, and Beaver Creek Bay.

- Grinnell 41X-1: The closest and most recent known Piping Plover nest site was in 2001 on Ruona Bay, 2.9 air-miles north of the proposed project site, on the north shore of Lake Sakakawea (USACE 2010). The July 13-14, 2010 inventories found no sightings or potential nesting or foraging habitats within a 0.5 mile radius of the proposed well pad and access road. No impacts to the Piping Plover are expected.
- Grinnell 34X-33: The closest and most recent known Piping Plover nest site was in 2001 on Ruona Bay, 2.7 air-miles east-northeast of the proposed project site, on the north shore of Lake Sakakawea (USACE 2010). The July 13-14, 2010 inventories found no sightings or potential suitable nesting or foraging habitats within a 0.5 mile radius of the proposed well pad and access road. No impacts to the Piping Plover are expected.
- GeorgeBlackHawk 21X-6: The closest and most recent known Piping Plover nest site was in 2001 on Ruona Bay, 2.5 air-miles east-northeast of the proposed project site, on the north shore of Lake Sakakawea (USACE 2010). The July 13-14, 2010 inventories found no sightings or potential nesting or foraging habitats within a 0.5 mile radius of the proposed well pad and access road. No impacts to the Piping Plover are expected.

Whooping Crane (Grus Americana): **Endangered**

Whooping Cranes breed in Alberta and Northwest Territories, Canada, and overwinter on the Texas coast (USFWS 2010c). They annually migrate through North Dakota during the spring and fall, making numerous stops to feed and roost before resuming migration. In North Dakota, peak migration occurs around April 19 (within an approximate 13-day time span) and October 18 (within an approximate 22-day span) for the spring and fall migrations, respectively (Tetra Tech 2010; Austin and Richert 2001). The proposed well sites occur within the 75% confirmed sightings band of the North Dakota Whooping Crane migration corridor (Tacha 2010; USFWS 2010d). However, based on the crane population and their average flight distances, it is estimated that as little as 4% of crane stopovers are reported. This is because the migration corridor is sparsely populated by people, observations may not be identified to the species, identified observations may not be reported, and those reported may not be confirmed (USFWS 2010d). From the 1960's to 2008 several Whooping Crane sightings were confirmed in Dunn County from 24 to 40 air-miles south to southwest of the proposed projects. The closest Whooping Crane sighting occurred in 1981 on the east side of the Missouri River in McLean County, about 6.6, 6.3, and 6.2 miles northeast of the Grinnell 41X-1, Grinnell 34X-33 and GeorgeBlackHawk 21X-6 project sites, respectively. However no occurrences of Whooping Cranes have been confirmed within four square miles of the Grinnell 41X-1, Grinnell 34X-33, and George BlackHawk 21X-6 project areas (Poitra 2008 and 2010; NDPR 2010; and USFWS 2010c).

In addition to confirmed sightings, potential Whooping Crane migratory feeding and roosting habitat was assessed within a one mile radius of the three proposed project areas through field observations and the use of USFWS National Wetland Inventory data (2010a), USDA Land Use data (2009b), and aerial photo (USDA 2009a) interpretation. Whooping Cranes often feed in cropland, but would also feed in shallow wetlands and wet meadows for aquatic invertebrates and vertebrates (Austin 2010). The USDA Land Use map indicates there are croplands within one mile of the three proposed project sites (USDA 2009b). However, a review of their aerial signatures indicates that these are are not croplands. No cropland was identified in the project vicinity during the July 2010 field inventories.

An intermittent drainage containing wetlands is located south of the three proposed project sites. The intermittent stream flows west to east into an arm of Saddle Butte Bay of Lake Sakakawea. The closest edge of the drainage is 0.2, 0.4, and 0.3 air-mile south of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project sites, respectively. The drainage includes old beaver activity,

cattails, and shallow open water. The average wetland width is approximately 150 feet wide and extends to the arm of Lake Sakakawea. Though not delineated, the wetland appears to be greater than 10 acres. Given the wetland's character, size, potential line of sight visibility that provides protection from predators, and connection to Lake Sakakawea this wetland complex could infrequently be used for temporary stopovers by Whooping Cranes. It is unlikely that this wetland would be used as primary feeding or roosting habitat given the lack of cropland (feeding sights) found within at least 0.5 mile. Due to vegetation and topography, there is no line of sight between this wetland complex and the three proposed well pads.

The distance between the proposed project sites and potential open water to the south occurs where the closest perennial drainage intersects Lake Sakakawea at 0.4 air-mile for proposed Grinnell sites 41X-1 and 34X-33 and 0.3 air-mile for proposed GeorgeBlackHawk 21X-6. Potential open water in the drainage to the north occurs more than a mile from Grinnell 41X-1 and at approximately 0.9 and 0.7 air-mile from Grinnell 34X-33 and GeorgeBlackHawk 21X-6, respectively. The NWI map data indicates that pockets of emergent wetland may occur in intermittent drainages north and west of the three proposed sites; however, these potential wetlands would likely not support Whooping Crane activity because of their small size and restricted lines of sight caused by topography and vegetation.

Given the lack of cropland, no direct line of sight between the three proposed well pads and the wetland in the southern drainage, and lack of sizeable wetlands north of the three proposed well pads, no negative impacts to Whooping Cranes by the development of the three proposed pads and access roads are expected.

***Pallid Sturgeon* (*Scaphirhynchus albus*): Endangered**

Recovery Priority Management Areas (RPMA) have been established in river reaches of pallid sturgeon preferred habitat (USEPA 2007). River reaches with the most recent occurrences of pallid sturgeon are assumed to provide the most suitable habitat for species restoration and recovery. The Missouri River reach within Lake Sakakawea is not a pallid sturgeon RPMA. The closest management area, RMPA-2, extends from the upstream limit of Lake Sakakawea, roughly 110 miles upstream of Independence Point (point of land north of the project site, USDA 2009a), to below Fort Peck Dam in Montana. The lower Yellowstone River to its Tongue River confluence in Montana is also within RMPA-2. The closest downstream pallid sturgeon river management area is RPMA-3, the upper limit of which is located along the border of South Dakota and Nebraska. Pallid sturgeon occupy turbid river systems, in water depths ranging from approximately 3 to 25 feet, and near the shore or in deeper chutes at the end of sandbars and islands (USFWS 1993). This species is believed to spawn between June and August and prefer velocities of 0.33 to 2.9 feet/second (USEPA 2007).

Potential open water in the Lake Sakakawea drainage south of the three proposed project sites is approximately 0.3 to 0.4 air-miles away. Potential open water in the drainage north of the proposed project sites is approximately 0.7 to 0.9 air-miles away. It is unlikely that the pallid sturgeon would occur in the drainage to the south due to its intermittent nature; similarly, it is extremely unlikely that sturgeon would use the drainage as primary habitat given the limited stream flow. Direct and indirect project-related activities are not expected to negatively impact water quality or quantity within the drainage to the south. Therefore, it is considered extremely unlikely that Lake Sakakawea (or the Missouri River) would receive runoff from work-related activities within these project sites. No impacts to the pallid sturgeon are expected.

***Dakota Skipper* (*Hesperia dacotae*): Candidate**

The Dakota skipper is a small butterfly that once occurred throughout the north-central USA and south-central Canada (USFWS 2009b). Dakota skippers are known to reside in western Minnesota, northeastern South Dakota, north-central North Dakota, and southeastern North Dakota (USFWS 2009b).

The Dakota skipper lives in high quality native prairies that contain a high diversity of wildflowers and grasses. Exotic grasses and shrubs do not provide habitat for this insect. Adult Dakota skippers live for three weeks in June and obtain nectar, which is critical to their reproduction, from woody lilies (*Lilium* spp.), harebells (*Campanula* spp.), smooth camas (*Camassia* spp.), coneflowers (*Echninacea* spp.), and blanketflowers (*Gaillardia* spp.). Larval Dakota skippers feed on grasses in the fall and over-winter in shelters or just below ground level at the bases of native bunchgrasses. It is possible that the Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project sites may provide potential habitat. The Dakota skipper was not observed at the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 sites during July 2010. However, the Dakota skipper was observed in 2010 at the proposed HeadlessTurtle project site, approximately 0.5 miles west of the proposed Grinnell 41X-1 site. Potential impacts to the Dakota skipper from development of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeogeBlackHawk 21X-6 well pads and access roads are unknown.

***Sprague's Pipit (Anthus spragueii)*: Candidate**
Sprague's Pipits arrive on the breeding grounds in April, leave in September and October, and have up to two breeding periods: late April to early June and mid-July to early September (Stewart 1975). The Sprague's Pipit is known to use and breed in alkaline meadows and around the edges of alkaline lakes (MTNHP 2010). They construct a domed ground nest and primarily feed on insects and seeds (Ehrlich et al. 1988). Sprague's Pipits are most commonly associated with native prairie comprised of sparse native bunch grasses of intermediate height with low visual obstruction. They appear to prefer grasslands with low (<20%) shrub cover within 330 feet of native prairie (Madden et al. 2000, Grant et al. 2004; Sutter 1997; Dechant et al. 2003, and Jones 2010b). Sprague's Pipits generally avoid areas with exotic grasses, such as smooth brome (*Bromus inermis*) (Madden 2010). Sprague's Pipits respond positively to short-interval fire cycles (every 2 to 4 years), depending upon moisture levels and type of grassland (dry versus mesic) because fire reduces litter buildup, shrub cover, vegetation density, and plant height (Madden et al. 1999). Studies have indicated that Sprague's Pipits are area-sensitive and require large grassland areas, though the specific patch size has not been determined (Davis 2004; see Dechant et al. 2003).

The proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 well pads and access roads occur in grasslands comprised of native forbs and grasses and a greater than 50% cover of two foot tall or shorter snowberry shrubs. In addition Grinnell 41X-1 has several small patches of the exotic grass, Japanese brome (*Bromus japonicus*) (Figure 3.7b). Patches of exotic forbs, Russian thistle (*Salsola kali*) and Canada thistle (*Cirsium arvense*), occur within the Grinnell 34X-33 and GeorgeBlackHawk 21X-6 sites (Figure 3.7b). Based on the Sprague's Pipet's preferences for a mosaic of primarily native prairie, less than 20% cover of shrubs greater than three feet tall, and the abundance of native prairie in vicinity of the three proposed well pads, the project sites contain potential pipit habitat. However, surveys conducted within a 0.5 mile radius of the proposed three well pads and access roads in July 2010 found no occurrence of the Sprague's Pipit. Potential impacts to the Sprague's Pipit are unknown.

3.6.2 Threatened and Endangered Species Impacts

Physical inventories were conducted on July 13-14, 2010. No occurrence of candidate and listed TE plants or animals and denning, roosting, or nesting sites are known to be present or were observed during the site visits. Therefore, no direct or indirect impacts to the four endangered and two threatened species would be expected. Potential to impact the two candidate species is unknown, as the vegetation communities within the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 sites may provide suitable habitat for these species.

Based on the above information and the proposed mitigation measures below, a **no effect** determination is rendered for the black-footed ferret, gray wolf, Interior Least Tern, Piping Plover, Whooping Crane, and Pallid Sturgeon. The potential to impact candidate species, the Dakota skipper and Sprague's Pipit, is unknown. Candidate species receive no legal protection under the Endangered Species Act - that is, there

are no legal prohibitions under the ESA against the "take" of a candidate species. Nonetheless, the USFWS promotes conservation actions for candidate species as they may eliminate the need to list the species as threatened or endangered.

3.6.3 Threatened and Endangered Species Mitigation

Impacts to potential habitat for the candidate species Dakota skipper and Sprague's Pipit could be minimized by reducing the area of ground disturbance, spot-treating (as opposed to broadcast spraying) noxious weeds with herbicides, and controlling exotic grasses and woody plants (USFWS 2009b; Madden et al. 1999, 2000).

To further reduce the potential for negative impacts to threatened or endangered species and their habitat the following mitigation measures would be implemented:

- Any sighting of a protected species within one-mile of the project area would be immediately reported to the USFWS, NDGFD, the Tribe, and the BIA.
- If initial site construction occurs within the February 1st-July 15th migratory bird nesting period then the project area may be mowed the season before and surveyed within 5 days of construction start by a qualified biologist to determine if active nests are present. If nests are present then construction would be delayed until active nests are abandoned or USFWS shall be contacted regarding how to proceed.
- If the site is planned for construction during the nesting period, the well pad site and access road may be mowed prior to the nesting season to discourage nesting by migratory birds (e.g., Sprague's Pipit).
- To maintain some habitat integrity, disturbed ground would be reclaimed using native plants from approved plant lists as identified by the Tribe and BIA. As required by the NDIC, reclamation costs are guaranteed through the issuance of a bond.
- To minimize disturbance to potential Dakota skipper habitat, the proposed project would include multiple wells at a single well pad location, thereby reducing habitat loss and fragmentation.
- The existing road network would be used as much as possible to further reduce potential skipper habitat loss and fragmentation.
- Noxious weeds would be treated as needed to help prevent this indirect impact on potential skipper habitat.

3.7 General Wildlife and Fisheries

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for wildlife and fishery resources in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

3.7.1 Wildlife Habitat

Wildlife habitat in the Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project area consists of grasslands, snowberry patches/swales, riparian areas, and shrubby thickets (Figure 3.7a). Wildlife in the project area use all four habitat types, though to varying degrees based on their life histories and species specific requirements.

Within the Grinnell 41X-1 project area grasslands comprise 7.56 acres (74%), snowberry patches/ swales 2.69 acres (26%), shrubby thickets < 0.01 acres (< 1%), and riparian areas < 0.01 acres (< 1%) (Table 3.7a). Within the Grinnell 34X-33 project area grasslands comprise 6.5 acres (61%), snowberry patches/ swales 3.93 acres (37%), and shrubby thickets 0.27 acres (2%) (Table 3.7b). Within the

GeorgeBlackHawk 21X-6 project area grasslands comprise 8.31 acres (73%), snowberry patches/ swales 2.87 acres (25%), and shrubby thickets 0.19 acres (2%) (Table 3.7c).

Figure 3.7a: Representative habitat types: grassland (foreground), shrubby thicket (photo left), snowberry patch (photo right), and riparian (background).

Table 3.7a: ***Summary of the wildlife habitat types and projected impacts for the proposed Grinnell 41X-1 project area.***

Habitat Type	Project Area[1] (acre)	Permanent Impact (acre)	Temporary Impact (acre)	Total Impact (acre)
Grassland	7.56	4.38	0.45	4.83
Snowberry patch/swale	2.69	1.87	0.12	1.99
Shrubby thicket	< 0.01	0.00	0.00	0.00
Riparian area	< 0.01	0.00	0.00	0.00
TOTAL	**10.27**	**6.25**	**0.57**	**6.82**

[1] Project area is defined as 100 feet on each side of the new access road centerline (200 feet total width) and a 10-acre area centered on the well pad.

Table 3.7b: ***Summary of the wildlife habitat types and projected impacts for the proposed Grinnell 34X-33 project area.***

Habitat Type	Project Area[1] (acre)	Permanent Impact (acre)	Temporary Impact (acre)	Total Impact (acre)
Grassland	6.50	3.35	0.27	3.62
Snowberry patch/swale	3.93	3.23	0.21	3.44
Shrubby thicket	0.27	0.01	0.01	0.02
TOTAL	**10.70**	**6.59**	**0.49**	**7.08**

[1] Project area is defined as 100 feet on each side of the new access road centerline (200 feet total width) and a 10-acre area centered on the well pad.

Table 3.7c: ***Summary of the wildlife habitat types and projected impacts for the proposed GeorgeBlackHawk 21X-6 project area.***

Habitat Type	Project Area[1] (acre)	Permanent Impact (acre)	Temporary Impact (acre)	Total Impact (acre)
Grassland	8.31	5.13	0.42	5.55
Snowberry patch/swale	2.87	1.66	0.07	1.73
Shrubby thicket	0.19	0.09	0.00	0.09
TOTAL	**11.37**	**6.88**	**0.49**	**7.37**

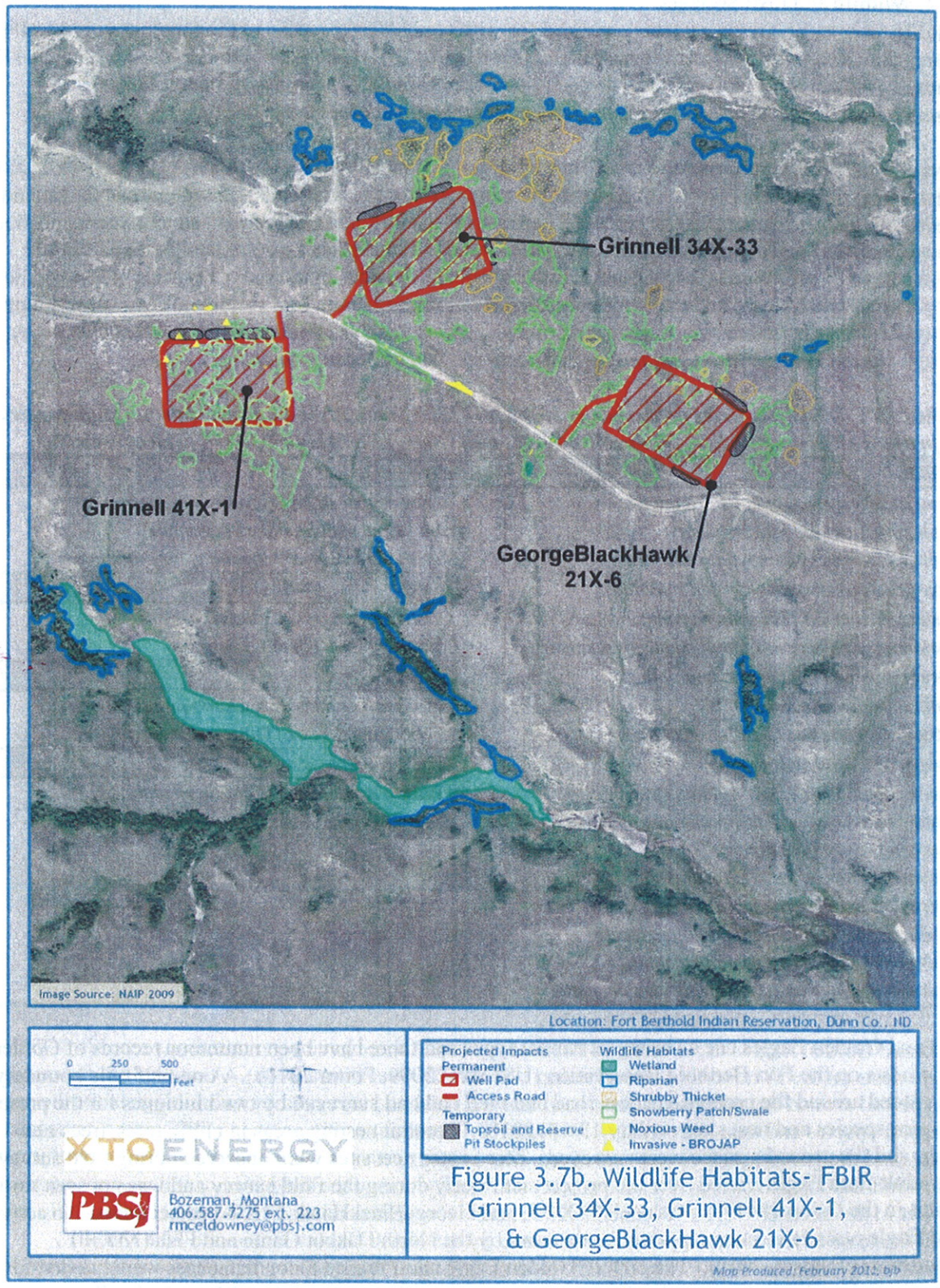
[1] Project area is defined as 100 feet on each side of the new access road centerline (200 feet total width) and a 10-acre area centered on the well pad.

At all three project sites, grasslands are comprised of a variety of graminoids and to a lesser degree, forbs (see *Section 3.9 - Vegetation and Invasive Species*). Grassland species found in project area include blue grama (*Bouteloua gracilis*), needleandthread grass (*Hesperostipa comata*), Kentucky bluegrass (*Poa pratensis*), green needlegrass (*Stipa viridula*), western wheatgrass (*Pascopyrum smithii*), cudweed sagewort (*Artemisia ludoviciana*), and silverleaf scurfpea (*Psoralea argophylla*). Grasslands provide forage and habitat for livestock, deer, pronghorn, medium and small sized mammals, reptiles, and resident and migratory birds.

Western snowberry (*Symphoricarpos occidentalis*) dominated patches and swales occur intermixed with grasslands (Figure 3.7b). The density of snowberry occurring as discrete patches on the landscape and in topographic low points, such as swales, can vary from about 10 to 100 percent cover. The presence and diversity of understory plant species can also vary considerably and depend upon environmental factors (e.g., soil moisture availability and exposure). However, a few plant species that commonly mix with snowberry include fringed sagewort (*Artemisia frigida*), Kentucky bluegrass (*Poa pratensis*), and prairie rose (*Rosa arkansana*). Snowberry provides important cover and forage for small mammals (e.g., rabbits, deer mice, and voles) and Sharp-tailed Grouse, and is considered fair browse for mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), and pronghorn (*Antilocapra americana*) (USDA-FEIS 2009a). Snowberry is also used by songbirds for nesting, foraging, and perching (e.g., Clay-colored Sparrow) (Dechant et al. 2002) and by hummingbirds for nectar (NPIN 2009).

The shrubby thicket habitat type, which is uncommon in the immediate study areas, was either predominantly composed of silver buffaloberry (*Shepherdia argentea*) or mixed with chokecherry (*Prunus virginiana*), hawthorn (*Crataegus* species), prairie rose, and/or other less common shrubs (Figure 3.7b). Understory plant species were often similar to adjacent grasslands or snowberry patches. Shrubby thickets are used by a wide variety of wildlife for thermal and escape/hiding cover, foraging, nesting, and/or perching. In North Dakota silver buffaloberry is considered to have good to fair nutritional value for mule deer, pronghorn, upland game birds, and small non-game birds; though it is considered of poor nutritional value for white-tailed deer (USDA-FEIS 2009b). In terms of cover, silver buffaloberry is considered to provide good to fair cover for mule deer, white-tailed deer, pronghorn, upland game birds, and passerine birds (USDA-FEIS 2009b).

Riparian areas are transitional zones between aquatic and terrestrial habitats. They are comprised of tree, shrub, and herbaceous species. In the project vicinity overstory trees are typically green ash (*Fraxinus pennsylvanica*) and understory shrubs include those found in shrubby thickets. They provide importantcover, forage, and travel corridors for resident wildlife. Forested habitat is comprised of the same overstory trees but typically lacks a prevalent shrub component and is often removed spatially from the immediate drainage bottoms.


Grinnell 34X-33
Grinnell 41X-1
GeorgeBlackHawk
21X-6
Image Source: NAIP 2009
Location: Fort Berthold Indian Reservation, Dunn Co., ND
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Feet
XTO ENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Projected Impacts
Permanent
Well Pad
Access Road
Temporary
Topsoil and Reserve Pit Stockpiles
Wildlife Habitats
Wetland
Riparian
Shrubby Thicket
Snowberry Patch/Swale
Noxious Weed
Invasive - BROJAP
Figure 3.7b. Wildlife Habitats- FBIR
Grinnell 34X-33, Grinnell 41X-1,
& GeorgeBlackHawk 21X-6
Map Produced: February 2012, bjb

3.7.2 Wildlife and Fish Species

Wildlife species and their sign were searched for within a half-mile radius of the three proposed well pad centers and access road centerlines during the July13 - 14, 2010 site visit at the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 sites (Table 3.7d). Signs of a particular species' presence included tracks, scat, burrows, shed antlers, nests, and skeletons.

Several bird species were noted in the Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas. Waterfowl were found in the drainage south of the well pads. Emergent marsh wetland created by historic beaver activity provided habitat for Red-Winged Blackbirds and an American Wigeon. An unidentified sparrow nest with eggs was discovered in thick grass approximately one-half mile southeast of the proposed GeorgeBlackHawk 21X-6 site. In addition to the bird species observed, the project area is also expected to provide breeding and foraging habitat to a variety of neotropical migrants, as well as foraging habitat for migrant and resident raptors such as Golden Eagle (*Aquila chrysaetos*), Rough-legged Hawk (*Buteo lagopus*), and Swainson's Hawk (*Buteo swainsoni*).

Table 3.7d: ***Wildlife species observed on July 13-14, 2010 within the half-mile project boundaries of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.***

BIRDS	**MAMMALS**
American Wigeon (*Anas americana*)	American Beaver (*Castor Canadensis*)
Bank Swallow (*Riparia riparia*)	Mule Deer (*Odocoileus hemionus*)
Cedar Waxwing (*Bombycilla cedrorum*)	White-tailed deer (*Odocoileus virginianus*)
Clay-colored Sparrow (*Spizella pallida*)	**FISH**
Eastern Kingbird (*Tyrannus tyrannus*)	Common Carp (*Cyprinus carpio*)
Grasshopper Sparrow (*Ammodramus savannarum*)	Minnow (species unknown)
Great Horned Owl (*Bubo virginianus*)	**AMPHIBIANS**
Gull (species unknown)	Northern Leopard Frog (*Rana pipiens*)
Mountain Bluebird (*Sialia currucoides*)	Woodhouse's Toad (*Bufo woodhousii*)
Red-tailed Hawk (*Buteo jamaicensis*)	**REPTILES**
Red-winged Blackbird (*Agelaius phoeniceus*)	Prairie Rattlesnake (*Crotalus viridis*)
Sharp-tailed Grouse (*Tympanuchus phasianellus*)	Smooth Green Snake (*Liochlorophis vernalis*)
Sparrow (species unknown)	
Spotted Towhee (*Pipilo maculates*)	
Turkey Vulture (*Cathartes aura*)	
Western Meadowlark (*Sturnella neglecta*)	
Yellow Warbler (*Dendroica petechia*)	
Yellow-rumped Warbler (*Dendroica coronata*)	

Bald and Golden Eagles use a variety of habitat types and there have been numerous records of Golden Eagle nests on the Fort Berthold Reservation (USFWS 2009e; Poitra 2010). A one-half mile boundary was placed around the proposed access road and well pad and surveyed by two biologists for the presence of raptor species and nest sites on July 13-14, 2010. Potential nesting areas in cliffs, trees, trees near water, and the ground surface were surveyed. Zero raptor nest sites were observed during field surveys. One adult Bald Eagle circled over the project site briefly during the field survey and was not seen using habitat in the Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas. No active Bald Eagle nests have been reported for this area by the North Dakota Game and Fish (NDGF) Department (Johnson 2010). The NDGF Golden Eagle and Prairie Falcon databases were queried for known nest locations. One Golden Eagle nest was observed in 1986, at 4.0, 4.1, and 3.9 miles south of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 proposed well pads, respectively. The nest was located on a cliff on the east side of McKenzie Bay overlooking the bay outlet to Lake Sakakawea. The eagle nest and was unoccupied at the time of the sighting and the current

condition of the nest is unknown (NDGF 2010). An occupied Prairie Falcon (*Falco mexicanus*) nest site was observed in 1985, at 0.83, 0.93, and 0.95 mile south-southwest of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project sites, respectively No observation record has been documented since 1985, but the nest may still be occupied (NDGF 2010).

In addition to the mammal species observed, the project area is also expected to be used, at least occasionally, by bobcat (*Lynx rufus*), deer mouse (*Peromyscus maniculatus*), long-tailed weasel (*Mustela frenata*), meadow vole (*Microtus pennsylvanicus*), mountain lion (*Puma concolor*), prairie vole (*Microtus ochrogaster*), pronghorn, and striped skunk (*Mephitis mephitis*).

Two reptilian species, the prairie rattlesnake and smooth green snake, were observed outside the area of impact for the three proposed well pads, but within the half-mile radius for the study area (Table 3.7d). One rattlesnake was observed near the drainage that is south of the wellpads and one smooth green snake crossed the existing road in front of field staff while they were conducting surveys. Additional prairie rattlesnakes were observed on a small bluff west of the proposed Grinnell 34X-33 well pad. Two amphibian species were also observed within the half-mile radius study area, the northern leopard frog and Woodhouse's toad (Table 3.7d). Leopard frogs were common along the main drainage that is south of the three proposed well pads.

Based on known distributions and preferred habitat types, there are 24 wildlife species identified by the North Dakota Game and Fish Department as species of conservation priority (SoCP) that could potentially occur in the project area (Table 3.7e) (Hagan et. al 2005). Two of these species, the Grasshopper Sparrow and smooth green snake, were observed during the site visit.

Table 3.7e: ***Species of Conservation Priority that potentially could occur in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.***

Common Name	Scientific Name	Conservation Priority[1]
BIRDS		
Baird's Sparrow	*Ammodramus bairdii*	I
Grasshopper Sparrow	*Ammodramus savannarum*	I
Sprague's Pipit	*Anthus spragueii*	I
Golden Eagle	*Aquila chrysaetos*	II
Short-eared Owl	*Asio flammeus*	II
Burrowing Owl	*Athene cunicularia*	II
Upland Sandpiper	*Bartramia longicauda*	I
Ferruginous Hawk	*Buteo regalis*	I
Swainson's Hawk	*Buteo swainsoni*	I
Lark Bunting	*Calamospiza melanocorys*	I
Chestnut-collared longspur	*Calcarius ornatus*	I
Northern Harrier	*Circus cyaneus*	II
Black-billed Cuckoo	*Coccyzus erythropthalmus*	I
Bobolink	*Dolichonyx oryzivorus*	II
Prairie Falcon	*Falco mexicanus*	II
Loggerhead Shrike	*Lanius ludovicianus*	II
Marbled Godwit	*Limosa fedoa*	I
Long-billed Curlew	*Numenius americanus*	I
Dickcissel	*Spiza americana*	I
Sharp-tailed Grouse	*Tympanuchus phasianellus*	II

Source: North Dakota Wildlife Conservation Strategy (Hagen et al. 2005).

[1] **Level I** = species that are in decline and presently receive little or no monetary support or conservation efforts.
Level II = have a moderate level of conservation priority *or* have a high level of conservation priority but a substantial level funding is available to them from other wildlife programs; and
Level III = species having a moderate level of conservation priority but are believed to be peripheral or non-breeding in North Dakota.

Table 3.7e (continued): ***Species of Conservation Priority that potentially could occur in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.***

Common Name	Scientific Name	Conservation Priority[1]
HERPTILES		
Western hognose snake	*Heterodon nasicus*	I
Smooth green snake	*Liochlorophis vernalis*	I
Plains spadefoot	*Spea bombifrons*	I
MAMMAL		
Swift fox	*Vulpes velox*	II

Source: North Dakota Wildlife Conservation Strategy (Hagen et al. 2005).

[1] **Level I** = species that are in decline and presently receive little or no monetary support or conservation efforts.
Level II = have a moderate level of conservation priority *or* have a high level of conservation priority but a substantial level funding is available to them from other wildlife programs; and
Level III = species having a moderate level of conservation priority but are believed to be peripheral or non-breeding in North Dakota.

No fishery habitat occurs within the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6. The closest fishery habitat is Lake Sakakawea, approximately 0.4 mile from the proposed GeorgeBlackHawk 21X-6 well pad. Game fish species common to Lake Sakakawea include northern pike (*Esox lucius*), rainbow trout (*Oncorhynchus mykiss*), sauger (*Stizostedion canadense*), walleye (*Stizostedion vitreum*), and yellow perch (*Perca flavescens*). During the field survey, numerous common carp were noted in the shallows of Lake Sakakawea where the main drainage south of the three proposed well pads flows into the lake. The segment of this drainage that is closest to the lake has a narrow defined channel and was flowing during the field survey; however, it lacks fish habitat and it is believed that few or no fish would occur in this drainage.

3.7.3 Wildlife and Fish Projected Impacts

Within the proposed Grinnell 41X-1 project area an estimated 4.38 acres of grassland and 1.87 acres of snowberry patch/swale would be permanently impacted due to construction of the proposed well pad and access road (Table 3.7a). An estimated additional 0.45 acres of grassland and 0.12 acres of snowberry patch/swale would be temporarily impacted from the stockpiling of topsoil and soil from the cuttings and catch-all pits (Table 3.7a). No shrubby thickets or riparian habitats would be impacted (Table 3.7a).

Within the proposed Grinnell 34X-33 project area an estimated 3.35 acres of grassland, 3.23 acres of snowberry patch/swale, and 0.01 acre of shrubby thicket would be permanently impacted due to construction of the proposed well pad and access road (Table 3.7b). An estimated additional 0.27 acre of grassland, 0.21 acre of snowberry patch/swale, and 0.01 acre of shrubby thicket would be temporarily impacted from the stockpiling of topsoil and soil from the cuttings and catch-all pits (Table 3.7b). No riparian habitat would be impacted (Table 3.7c).

Within the proposed GeorgeBlackHawk 21X-6 project area an estimated 5.13 acres of grassland, 1.66 acres of snowberry patch/swale, and 0.09 acre of shrubby thicket would be permanently impacted due to construction of the proposed well pad and access road (Table 3.7c). An estimated additional 0.42 acres of grassland and 0.07 acres of snowberry patch/swale would be temporarily impacted from the stockpiling of topsoil and soil from the cuttings and catch-all pits (Table 3.7c). No riparian habitat would be impacted (Table 3.7c).

Construction of the project may result in direct wildlife mortality to those species (e.g., mice, snakes, voles, young birds/eggs, and pocket gophers) with limited mobility and/or to those who occupy burrows or nests at the time of construction. More mobile species (e.g., adult deer, coyotes, and most adult birds) would be able to avoid direct mortality by moving into adjacent habitat. Generally, these direct impacts

to wildlife habitat and wildlife populations in the project area are considered minor due to the abundance of similar habitats in the vicinity.

During the early nesting season, eagles can be sensitive to human disturbance, which could potentially result in nest abandonment. Other migratory birds are susceptible to nest abandonment during nesting as well, and are afforded protection under the *Migratory Bird Treaty Act* (MBTA).

According to the USFWS (2009e) wildlife mortality at oil facilities in North Dakota is most often associated with drilling reserve pits, flare pits, and/or drip buckets and barrels. For this reason a closed loop system is recommended by the USFWS (2009e). A semi-closed loop would be used by XTO for all wells drilled. If used open pits would be netted and any oil would be cleaned up immediately to prevent accidental wildlife mortality in the immediate project area. Pits would have a reinforced synthetic liner to prevent potential leaks.

Habitat fragmentation can be either a direct or an indirect impact and is commonly associated with oil and gas projects. It can be defined as the separation of previously contiguous blocks of habitat into one or more disconnected pieces. Habitat fragmentation can occur in the physical sense of dividing up the landscape by a road or a development, or through an increase in the level of activity which may prevent or hinder wildlife movement. Either form of habitat fragmentation can result in impediments to wildlife dispersal and corresponding genetic exchange among populations.

The existing county road system, agricultural activities, and oil/gas exploration contribute to habitat fragmentation in the project vicinity. However, no substantial impediment to wildlife movement is yet apparent. The proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 well pads and access roads would contribute to temporary habitat fragmentation during the drilling process. If the wells were developed for commercial production, the three proposed projects would add to more permanent habitat fragmentation in the project areas, primarily by increasing the amount of roads and level of activity in the area.

Other forms (i.e., increased noise or odor) of indirect impacts might affect local distributions of wildlife around proposed well pads and access roads. These types of impacts may affect the local distribution of particular animal species by displacing them into adjacent habitats; however, they are not expected to negatively affect local populations.

No impacts to fish are expected because no fishery resources occur within the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

3.7.4 Wildlife Mitigation

Potential impacts to wildlife species and their habitats have been avoided and minimized through consultation with the BIA to locate the proposed well pad and access road outside of any riparian area, in using a relatively diffuse drilling density (up to 1,280 acres per drill site), using existing roads where possible, and by using directional drilling. Directional drilling has allowed the consolidation of well pads and access roads, thereby reducing habitat fragmentation in the area. Reclamation of habitat over the life of the project would further reduce long-term impacts to wildlife and their habitat. Additional mitigation measures are listed below.

- XTO intends to follow, to the greatest extent practicable, recommendations and guidance provided by the USFWS to minimize adverse impacts to migratory birds (USFWS 2009e).
- If initial site construction occurs within the nesting season, the project site would be surveyed by a qualified biologist within 5 days of the beginning of construction to determine if and where active nests occur in relation to proposed construction activities. If active nests are found,

construction would be delayed until active nests are abandoned or USFWS would be contacted on how to proceed.

- If the site is planned for construction during the nesting period (February 1st-July 15th), the well pad site and access road may be mowed prior to the nesting season to discourage nesting by migratory birds.
- The USFWS recommends that a buffer of at least one-half mile be placed around any known Bald or Golden Eagle nest (USFWS 2009e). If a Bald or Golden Eagle nest is observed within a half-mile of the proposed project, the USFWS would be consulted.
- A semi-closed loop system would be used for all drilling activities.
- The cuttings pit and catch-all pit would be covered with a nylon net with a 1.5 inch mesh size to prevent birds from entering them. The nets would remain in place until the pits are reclaimed.
- Utility lines (i.e., spur lines) leading to the well pad would be installed below ground.
- The entire well pad would be fenced to prevent livestock and wildlife access to the site.
- Pits would be fenced on all four sides in order to protect wildlife, livestock, and personnel from falling into the pit if the entire site has not already been protected within a fence.
- Drill and reserve pits would have a reinforced synthetic liner to prevent potential leaks. All spills or leaks of chemicals and other pollutants would be reported to the BLM and EPA. The procedures of the surface management agency would be followed to contain leaks or spills.
- The tops of the fill slopes would be bermed (2 feet) to prevent runoff and a silt fence would be placed at the bottom of fill slopes to prevent offsite sedimentation.
- Where feasible, a drainage ditch would be installed on the up-gradient side of the well pads to prevent surface water from entering from adjacent lands.
- The corners of the well pad would be rounded to create a greater buffer to drainages.
- As recommended by the USFWS, drip buckets and barrels located under valves and spigots would be covered with wire mesh to prevent wildlife from entering and becoming entrapped.

3.8 Soils

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for soil resources in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

The proposed Grinnell 41X-1, Grinnell 34X-33 and GeorgeBlackHawk 21X-6 project sites are located near the center of the Williston Basin at the boundary of the Missouri Plateau and the Missouri Trench, about one mile west of Lake Sakakawea. The general area consists of hills and uplands defined by a landscape of pediments, gentle ridges, backslopes, alluvial fans, depressions, and well-defined drainageways. The area drains to the east into Lake Sakakawea.

The Sentinel Butte Formation consisting of poorly lithified sandstone, siltstone, and mudstone is found from the surface to depths of several hundred feet. The proposed sites are found on fine-textured, silty to clayey soils developed in residuum and alluvium from semi-consolidated siltstone and mudstone. Slopes on and adjacent to the proposed sites range from nearly level to strongly sloping (2 to 15 percent).

3.8.1 Soil Investigation

An investigation of the variability in landscapes was conducted at each of the three proposed project sites in order to describe and document found soils, establish taxonomic classes for soil pedons, identify Natural Resources Conservation Service (NRCS) soil map units, key ecological sites, and to determine potential impacts to soils. Estimates of soil map unit areas are based on multiple factors including line-transect and area field sample hits, NRCS soil map unit composition values, aerial photo examination and geomorphic proportions of specific landform types. Reference soil maps and soil data tables for the project area were obtained prior to conducting field work (NRCS 2010). Detailed soil pedon descriptions

and site notes consistent with changes in landscape position and/or ecological sites were taken along the proposed access road and well pad locations on July 17-19, 2010 (Figure 3.8 and Appendix D). Soil series components and representative NRCS soil survey map units (SMUs) listed in Tables 3.8a-c are those that best fit the on-site investigations and do not necessarily match those found on general 1:24,000 scale NRCS maps.

Table 3.8a: ***Soils observed at the proposed Grinnell 41X-1 project site.***

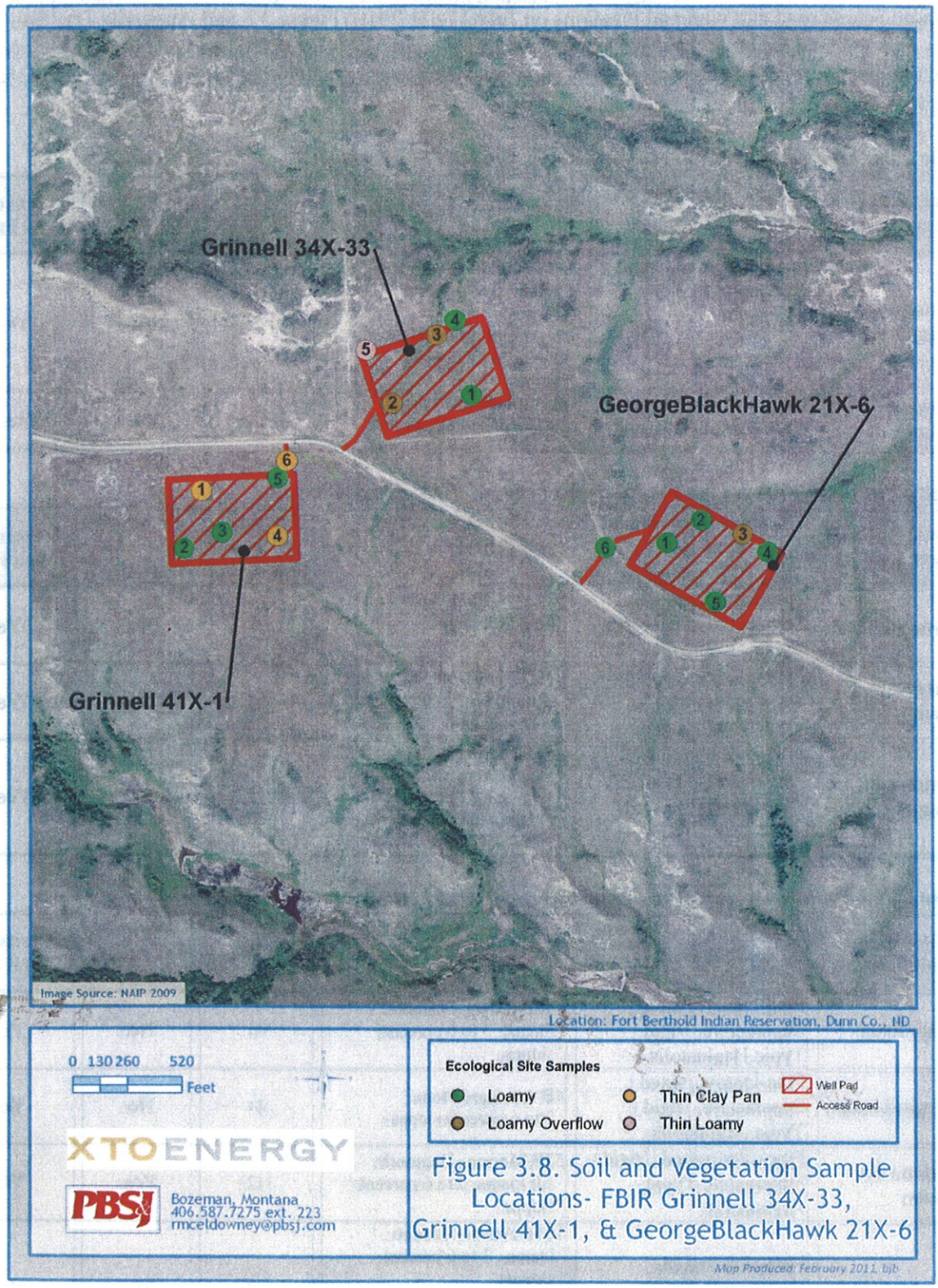
Soil Series Component	Textural Family and Taxonomic Classification	Representative NRCS Soil Map Unit(s) (assigned)	Percent Slopes (observed)	Presence in Access Road	Presence in Well Pad
Morton silt loam	Fine-silty mixed, frigid Superactive Typic Argiustolls	52B Morton-Dogtooth silt loams, 0 to 6 percent slopes; 52C Morton-Dogtooth silt loams, 6 to 9 percent slopes	4-12	No	Yes
Rhoades silt loam	Fine-smectitic, frigid Leptic Vertic Natrustolls	62B Rhoades silt loam, 0 to 6 percent slopes	2-4	Yes	Yes

Table 3.8b: ***Soils observed at the proposed Grinnell 34X-33 project site.***

Soil Series Component	Textural Family and Taxonomic Classification	Representative NRCS Soil Map Unit(s) (assigned)	Percent Slopes (observed)	Presence in Access Road	Presence in Well Pad
Arnegard loam	Fine-loamy, mixed Superactive, frigid Typic Argiustolls	4B Arnegard loam, 2 to 6 percent slopes	3-4	No	Yes
Cherry silt loam	Fine-silty mixed, Superactive, frigid, Typic Haplustepts	73C Cherry-Vanda complex, 2 to 9 percent slopes, gullied	5	No	Yes
Morton silt loam	Fine-silty mixed, frigid Superactive Typic Argiustolls	52B Morton-Dogtooth silt loams, 0 to 6 percent slopes; 52C Morton-Dogtooth silt loams, 6 to 9 percent slopes	2-7	No	Yes

Table 3.8c: ***Soils observed at the proposed GeorgeBlackHawk 21X-6 project site.***

Soil Series Component	Textural Family and Taxonomic Classification	Representative NRCS Soil Map Unit(s) (assigned)	Percent Slopes (observed)	Presence in Access Road	Presence in Well Pad
Armor loam	Fine-loamy, mixed Superactive, frigid Typic Haplustolls	101B Armor-Shambo loams, 3 to 6 percent slopes	4	No	Yes
Arnegard loam	Fine-loamy, mixed Superactive, frigid Typic Argiustolls	4B Arnegard loam, 2 to 6 percent slopes	4	No	Yes
Morton silt loam	Fine-silty mixed, frigid Superactive Typic Argiustolls	52B Morton- Dogtooth silt loams, 0 to 6 percent slopes	1-2	Yes	Yes
Shambo loam	Fine-silty mixed, Superactive, frigid, Tyoic Haplustepts	101B Armor-Shambo loams, 3 to 6 percent slopes; 101C Armor-Shambo loams, 6 to 9 percent slopes	1-9	No	Yes


Grinnell 34X-33
GeorgeBlackHawk 21X-6
Grinnell 41X-1
Image Source: NAIP 2009
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 130 260 520
Feet
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Ecological Site Samples
Loamy
Thin Clay Pan
Loamy Overflow
Thin Loamy
Well Pad
Access Road
Figure 3.8. Soil and Vegetation Sample Locations- FBIR Grinnell 34X-33, Grinnell 41X-1, & GeorgeBlackHawk 21X-6
Map Produced: February 2011, bjb

Soil map units are summarized below:

- **SMU 4B – Arnegard loam, 2 to 6 percent slopes:** This map unit is found on hills and uplands with component soils developed in loamy alluvium from mixed sedimentary sources. The Arnegard soil (90%) is found in depressions, swales and drainageways, is well drained, and has a high available water capacity. Topsoil depth ranges from 5 to 20 inches and depth to a restrictive layer (soft sedimentary beds) is greater than 60 inches. Other listed minor soils (10%) were not observed. The ecological site for Arnegard loam is Loamy Overflow-R054XY023ND and was observed at sample locations *2* and *3* on Grinnell 34X-33 and site location *3* on GeorgeBlackHawk 21X-6 (Figure 3.8).

- **SMU 52B - Morton-Dogtooth silt loams, 0 to 6 percent slopes** and **SMU 52C - Morton-Dogtooth silt loams, 6 to 9 percent slopes:** These map units are found on hills and uplands with component soils developed in silty and clayey residuum and alluvium from semi-consolidated siltstone and mudstone and differ only in percent slope range. The Morton soil (55%) is found on convex backslopes, is well-drained and has a moderate available water capacity. Topsoil depth ranges from three to 12 inches. Depth to a restrictive layer (soft sedimentary beds) is greater than 40 inches. The listed Dogtooth soil (25%) is found in concave areas, is well-drained, and has a very low available water capacity; however, this soil was not observed in the field. Topsoil depth ranges from two to four inches. Depth to a restrictive layer (soft sedimentary beds) is about 20 to 40 inches. Other listed minor soils (20%) were not observed. The ecological site for Morton silt loam is Loamy-R054XY031ND and was observed at sample locations *2*, *3*, and *5* on Grinnell 41X-1, sample locations *1* and *4* on Grinnell 34X-33, and sample locations *4* and *6* on GeorgeBlackHawk 21X-6 (Figure 3.8).

- **SMU 62B – Rhoades silt loam, 0 to 6 percent slopes:** This map unit is found on hills and uplands with component soils developed in silty to clayey residuum and alluvium from semi-consolidated siltstone and mudstone. The Rhoades soil (75%) is found on alluvial fans and flats at the base of eroded hillsides, is well-drained, and has a very low available water capacity. Topsoil depth ranges from one to five inches. Depth to a restrictive layer (soft sedimentary beds) is about 40 to 60 inches below the surface. Other listed minor soils (25%) were not observed. The ecological site for Rhoades silt loam is Thin Claypan-R054XY033ND and was observed at sample location *1*, *4*, and *6* on Grinnell 41X-1 (Figure 3.8).

- **SMU 73C – Cherry-Vanda Complex, 2 to 9 percent slopes, gullied:** This map unit is found on uplands with component soils developed in fine-silty alluvium weathered from semi-consolidated siltstone and mudstone. The Cherry soil (45%) is found on alluvial fans and backslopes, is well drained, and has a high available water capacity. The Cherry topsoil depth ranges from two to five inches and depth to a restrictive layer (soft sedimentary beds) is greater than 60 inches. The listed Vanda soil (35%) is found on alluvial fans and terraces, is well drained, and has a moderate available water capacity; however, it was not observed in the field. The Vanda topsoil depth ranges from four to six inches and depth to a restrictive layer (soft sedimentary beds) is greater than 60 inches. Other listed minor soils (20%) were not observed. Some areas in this map unit may have deep gullies with steep cut faces devoid of vegetation. The ecological site for Cherry silt loam is Thin Loamy-R054XY038ND and was observed at sample location *5* on Grinnell 34X-33 (Figure 3.8).

- **SMU 101B – Armor-Shambo loams, 3 to 6 percent slopes** and **SMU 101C – Armor-Shambo loams, 6 to 9 percent slopes:** These map units are found on uplands with component soils developed in fine-loamy alluvium and residuum weathered from semi-consolidated siltstone and mudstone bedrock and differ only in the range of percent slope. The Armor soil (60%) is found on pediments, is well drained, and has a low available water capacity. Armor topsoil depth ranges from four to six inches and depth to a restrictive layer (soft sedimentary beds) is 20 to 40 inches. The Shambo soil

(25%) is found on alluvial fans and terraces, is well drained, and has a high available water capacity. Shambo topsoil depth ranges from four to nine inches and depth to a restrictive layer (soft sedimentary beds) is greater than 60 inches. Other listed minor soils (15%) were not observed. The ecological site for Armor loam is Loamy-R054XY031ND and was observed at sample location *1* on GeorgeBlackHawk 21X-6. The ecological site for Shambo loam is Loamy-R054XY031ND and was observed at sample locations *2* and *5* on GeorgeBlackHawk 21X-6 (Figure 3.8).

The proposed Grinnell 41X-1 access road would transect an area of fine-smectitic (clayey) soils developed in residuum and alluvium from semi-consolidated siltstone and mudstone on an upland flat (Figure 3.8). The access road would traverse approximately 143 feet (0.7 acre) of SMU 62B (Table 3.8d). Soils in this SMU have a low infiltration rate when saturated, resulting in a high runoff potential and a moderate to high hazard of erosion by water (Table 3.8g).

The proposed Grinnell 41X-1 well pad consists of a complex of fine-silty and fine-smectitic (clayey) soils developed in residuum and alluvium from semi-consolidated siltstone and mudstone (Figure 3.8). The well pad would occupy approximately equal acreages of SMUs 52B/C and 62B (Table 3.8d). Soils in SMUs 52B and 52C have a medium to low infiltration rate when saturated resulting in a moderate to high run-off potential and a moderate to high hazard of erosion by water. Soils in SMU 62B have a low infiltration rate when saturated resulting in a high runoff potential and a moderate to high hazard of erosion by water (Table 3.8g).

Table 3.8d: ***Estimates of soil map units found at the proposed Grinnell 41X-1 project site.***

Soil Map Unit	Access Road[1]		Well Pad Acreage	Total Acreage	Percent of Total Acreage
	Length (feet)	Area (acres)			
52B/C Morton-Dogtooth silt loams, 0 to 6 percent slopes and 6 to 9 percent slopes	0	0	2.7	2.7	42
62B Rhoades silt loam, 0 to 6 percent slopes	220	1.0	2.8	3.8	58
Total	**220**	**1.0**	**5.5**	**6.5**	**100**

[1] Based on a ROW buffer of 100 feet from centerline.

The proposed Grinnell 34X-33 well pad site is a complex of fine-silty and fine-loamy soils developed in residuum and alluvium from semi-consolidated siltstone, mudstone, and other mixed sedimentary materials (Figure 3.8). The proposed well pad would occupy approximately 1.1 acres of SMU 4B, 1.1 acres of SMU 73C, and 3.3 acres of SMU 52B/C (Table 3.8e). Soils in SMU 4B have a low to medium infiltration rate when saturated resulting in a moderate run-off potential and a moderate hazard of erosion by water (Table 3.8g). Soils in SMU 52B and 52C have a medium to low infiltration rate when saturated resulting in a moderate to high run-off potential and a moderate to high hazard of erosion by water (Table 3.8e). Soils in SMU 73C have a medium infiltration rate when saturated resulting in a moderate runoff potential and a moderate to high hazard of erosion by water (Table 3.8g).

Table 3.8e: ***Estimates of soil map units found at the proposed Grinnell 34X-33 project site.***

Soil Map Unit	Access Road[1]		Well Pad Acreage	Total Acreage[2]	Percent of Total Acreage[2]
	Length (feet)	Area (acres)			
4B Arnegard loam, 2 to 6 percent slopes	315	1.5	1.1	2.6	37
73C Cherry-Vanda complex, 2 to 9 percent slopes, gullied	0	0	1.1	1.1	15
52B/C Morton-Dogtooth silt loams, 0 to 6 percent slopes and 6 to 9 percent slopes	0	0	3.3	3.3	48
Total	**0**	**1.5**	**5.5**	**7.0**	**100**

[1] Access road location changed after field study; therefore, soils not observed in the re-located road corridor.
[2] Total only includes the well pad because the access road location was moved after the field work was completed.

The proposed GeorgeBlackHawk 21X-6 access road transects an area of fine-silty soils developed in residuum and alluvium from semi-consolidated siltstone and mudstone on an upland pediment (Figure 3.8). The access road would traverse 227 feet (1 acre) of SMU 52B (Table 3.8f). Soils in SMU 52B have a medium to low infiltration rate when saturated resulting in a moderate to high run-off potential and a moderate to high a hazard of erosion by water (Table 3.8g).

The proposed GeorgeBlackHawk 21X-6 well pad site consists of a complex of fine-silty and fine-loamy soils developed in residuum and alluvium from semi-consolidated siltstone and mudstone (Figure 3.8). The well pad would occupy 1.1 acres of SMU 4B, 1.6 acres of SMU 52B, and 2.8 acres of SMU 101B/C (Table 3.8f). Soils in SMU 4B have a low to medium infiltration rate when saturated resulting in a moderate run-off potential and moderate hazard of erosion by water (Table 3.8g). Soils in SMU 52B have a medium to low infiltration rate when saturated resulting in a moderate to high run-off potential and a moderate to high a hazard of erosion by water (Table 3.8g). Soils in SMU 101B and SMU 101C have a medium infiltration rate when saturated resulting in a moderate runoff potential and a moderate to high hazard of erosion by water (Table 3.8g).

Table 3.8f: ***Estimates of soil map units found at the proposed GeorgeBlackHawk 21X-6 project site.***

Soil Map Unit	Access Road[1]		Well Pad Acreage	Total Acreage	Percent of Total Acreage
	Length (feet)	Area (acres)			
4B Arnegard loam, 2 to 6 percent slopes	0	0	1.1	1.1	14
52B Morton- Dogtooth silt loams, 0 to 6 percent slopes	455	2.1	1.6	3.7	49
101B/C Armor-Shambo loams, 3 to 6 percent slopes; 6 to 9 percent slopes	0	0	2.8	2.8	26
Total	**455**	**2.1**	**5.5**	**7.6**	**100**

[1] Based on a ROW buffer of 100 feet from centerline.

Table 3.8g: ***Soil attributes for the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project sites.***[1]

Soil Series	Soil Map Unit (s)	In Access Road	In Well Pad	Surface Layer Composition			Erosion Factor[2]		Hydrologic Soil Group[5]
				% sand	% silt	% clay	Kf[3]	T[4]	
Armor	101B/C	No	Yes	42.1	37.9	20.0	0.24	3	B
Arnegard	4B	No	Yes	41.1	36.9	22.0	0.24	5	B
Cherry	73C	No	Yes	6.3	62.7	31.0	0.32	5	B
Dogtooth	52B/C	-	-	26.0	52.0	22.0	0.28	2	D
Morton	52B/C	Yes	Yes	11.2	66.8	22.0	0.28	3	B
Rhoades	62B	Yes	Yes	26.0	52.0	22.0	0.32	2	D
Shambo	101B/C	No	Yes	39.1	36.9	24.0	0.28	5	B
Vanda	73C	-	-	5.3	44.7	50.0	0.28	5	D

[1] Source: NRCS (2010).
[2] Erosion Factors indicate susceptibility of a soil to sheet and rill erosion by water.
[3] 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.
[4] T estimates maximum average annual rates of erosion by wind and water that will not affect crop productivity. Tons/acre/year range from 1for shallow soils to 5 for very deep soils. Higher T soils can tolerate higher rates of erosion without loss of productivity.
[5] Hydrologic Soil Groups are based on estimates of runoff potential under the following conditions: thoroughly wet soils unprotected by vegetation receive precipitation from long-duration storms. The rate of infiltration decreases from Group A (high infiltration, low runoff) to D (low infiltration, high runoff).

The majority of soils at the three proposed project sites are moderately deep to deep (30 to more than 60 inches) and developed in residuum and alluvium from semi-consolidated siltstone and mudstone beds having silty to loamy topsoil layers over loamy, clayey and dense clay subsoils. Swales and drainageways consist of moderately deep to deep soils developed in loamy alluvium from siltstone and mudstone sources having moderately thick topsoil layers and loamy to clayey subsoils. Slopes range from one to 12 percent.

3.8.2 Soil Impacts

The proposed Grinnell 41X-1 well pad would permanently disturb 5.9 acres and temporarily (from stockpiles) disturb 0.57 acres of surface soil. The proposed Grinnell 41X-1 new access road would permanently disturb approximately 0.16 acre of surface soil.

The proposed Grinnell 34X-33 well pad would permanently disturb 5.84 acres and temporarily (from stockpiles) disturb 0.49 acres of surface soil. The proposed Grinnell 41X-1 new access road would permanently disturb approximately 0.88 acre of surface soil.

The proposed GeorgeBlackHawk 21X-6 well pad would permanently disturb 6.1 acres and temporarily (from stockpiles) disturb 0.49 acres of surface soil. The proposed GeorgeBlackHawk 21X-6 new access road would permanently disturb approximately 0.98 acre of surface soil.

Pad site leveling would create cut and fill slopes vulnerable to erosion. Soils characterized by thin topsoil layers (i.e., Cherry, Dogtooth, and Rhoades soils) may require additional off-site topsoil quantities to satisfy seeding and reclamation efforts. Dense clay subsoil materials (i.e., Rhoades and Dogtooth soils) have high subsoil salinity (5.0 to 15.0 mmhos/cm) and high sodium absorption ratios (10 to 25) and may be toxic to non-salt tolerant vegetation (pH range 7.9 to 9.0). Careful removal of the topsoil is needed to prevent it from mixing with the calcareous subsoil materials as mixing would adversely affect successful re-vegetation of disturbed areas. In addition, the dense clay layers in these soils have a high coefficient of

linear extensibility (6.0 to 8.9%) and may pose a general hazard to site development when wet. Rhoades and Dogtooth soils have semi-consolidated siltstone and mudstone beds at 46 to 60 inches and 13 to 21 inches, respectively. Soils are classified to about 60 inches or limiting layer. Reference Unified Classification System (engineering) properties for subsoils are provided in Table 3.8h.

Table 3.8h: ***Unified Classification of Subsoil Materials for Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6.***

Soil Series	Depth Range (inches)	Unified Classification Symbol*
Armor	19-31	CL
Arnegard	36-60	CL,SC
Cherry	33-60	CH,CL
Dogtooth	13 to 21	CH,CL
Morton	15 to 33	CH,CL
Rhoades	46 to 60	CH,CL
Shambo	48 to 60	CL
Vanda	4 to 60	CH

* See Figure D1 in Appendix D for definitions of the Unified Classification System symbols.

3.8.3 Soil Mitigation

Soils are most prone to erosion during construction. Topsoil would be stripped from areas of new construction and stockpiled for use during reclamation. Additional quantities of topsoil may be required from off-site or near-site sources where native topsoil layers are thin. Areas stripped of vegetation during initial construction would be reseeded once construction is complete. Implementation of proven best management practices for stabilization and reclamation is expected to reduce soil erosion to negligible levels. Various practices have been shown to feasibly and significantly reduce erosion of a wide variety of soils (see BLM Gold Book, Fourth Edition 2007; BLM Best Management Practices [BMPs] standard reference):

Best Management Practices (BMPs) applicable to Grinnell 41X-1, Grinnell 34X-33 and GeorgeBlackHawk 21X-6 include, but are not limited to:

- Limit ground disturbance to the area that is necessary for the project.
- Minimize the area from which topsoil would be removed.
- Topsoil would be salvaged for use in reclamation.
- Stockpile additional quantities of topsoil as needed (off-site sources).
- Reduce the time that topsoil is stockpiled and seed with native plant species in order to retain viable soil nutrients.
- Topsoil would be stored in at least two piles at each pad to facilitate interim reclamation.
- Minimize the time that barren areas are exposed to reduce soil erosion and colonization by weeds.
- Erosion control matting would be completed on all cut and fill slopes. Silt fences would be used downgradient from fill slopes.
- Where feasible, a drainage ditch would be installed on the up-gradient side of the well pad.
- Employ dust control measures as needed.
- Berms would be installed at the top of fill slope areas.
- Straw booms/wattles would be used to prevent soil erosion.

3.9 Vegetation and Invasive Species

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for vegetation and invasive species in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

3.9.1 Ecological Sites

The ecological site methodology was used to analyze native vegetation and invasive species. An ecological site is the product of all the environmental factors responsible for its development, and has a set of defining characteristics (NRCS 2004). Ecological sites have characteristic soils that have developed over time through the soil development process. The factors which affect soil development are parent material, climate, living organisms, topography or landscape position, and time. An ecological site has a characteristic hydrology, particularly infiltration and runoff, which has developed over time. The hydrologic development is influenced by the development of the soil and plant community. The opposite is also true. Ecological sites evolve into characteristic plant communities. The plant community on an ecological site is typified by an association of plant species that differs from that of other ecological sites in the kind and/or proportion of species or in primary production (NRCS 2004).

At the proposed Grinnell 41X-1 project site, 6 vegetative site inventories were conducted on July 19, 2010 (Figure 3.8). Two distinct ecological sites were identified on the project area: Thin Claypan (three locations) and Loamy (three locations) (Figure 3.8, Table 3.9a).

Table 3.9a: ***Summary of vegetation sample sites at the proposed Grinnell 41X-1 project area.***

Vegetation Sample Sites	Ecological Soil Type (reference ID)	Location	Approx. Elevation (feet)	Aspect & Slope	Dominant Plant Species[1] Photo Numbers in App. B[2]
Site #1	Thin Claypan R054XY033ND	Pad Site	1,930	South 2%	Blue grama, needleandthread grass, green needlegrass, western wheatgrass, prairie junegrass, green sagewort, cudweed sagewort, silverleaf scurfpea, prairie coneflower, goldenrod, fringed sagewort, western snowberry **Photo 9 & 10, Page B-2**
Site #2	Loamy R054XY031ND	Pad Site	1,929	NE 12%	Blue grama, needleandthread, green needlegrass, western wheatgrass, common yarrow, cudweed sagewort, green sagewort, silverleaf scurfpea, prairie coneflower, scentless may weed, western snowberry, poison ivy **Photo 11 & 12, Page B-2.**
Site #3	Loamy R054XY031ND	Pad Site	1,927	SE 5%	Kentucky bluegrass, blue grama, needleandthread grass, green needlegrass, western wheatgrass, cudweed sagewort, green sagewort, silverleaf scurfpea, prairie coneflower, western snowberry **Photo 13, Page B-3**
Site #4	Thin Claypan R054XY033ND	Pad Site	1,919	SE 2%	Kentucky bluegrass, blue grama, needleandthread grass, green needlegrass, western wheatgrass, prairie dropseed,

Vegetation Sample Sites	Ecological Soil Type (reference ID)	Location	Approx. Elevation (feet)	Aspect & Slope	Dominant Plant Species[1] Photo Numbers in App. B[2]
					cudweed sagewort, green sagewort, silverleaf scurfpea, western snowberry, poison ivy **Photo 14 & 15, Page B-3**
Site #5	Loamy R054XY031ND	Pad Site	1,923	South 4%	Blue grama, needleandthread grass, green needlegrass, western wheatgrass, Kentucky bluegrass, cudweed sagewort, green sagewort, silverleaf scurfpea, goldenrod, western snowberry **Photo 16 & 17, Page B-3**
Site #6	Thin Claypan R054XY033ND	Access Road	1,927	SE 4%	Kentucky bluegrass, blue grama, needleandthread grass, green needlegrass, western wheatgrass, cudweed sagewort, green sagewort, silverleaf scurfpea, goldenrod, prairie coneflower, scentless mayweed, western snowberry, poison ivy, prairie rose **Photo 18 & 19, Page B-3 & B-4**

[1] See Appendix C for more detailed information on species encountered at each site and for scientific names.
[2] General site photographs can be found on pages B-1 through B-4 in Appendix B.

At the proposed Grinnell 34X-33 project site, five vegetative site inventories were conducted on July 17-18, 2010 (Figure 3.8). Three distinct ecological sites were identified in the project area: Loamy (two locations), Loamy Overflow (two locations), and Thin loamy (one location) (Table 3.9b).

Table 3.9b: ***Summary of vegetation sample sites at the proposed Grinnell 34X-33 project area.***

Vegetation Sample Sites	Ecological Soil Type (reference ID)	Location	Approx. Elevation (feet)	Aspect & Slope	Dominant Plant Species[1] Photo Numbers in App. B[2]
Site 1	Loamy R054XY031ND	Pad Site	1,914	East 7%	Blue grama, western wheatgrass, Kentucky bluegrass, cudweed sagewort, silverleaf scurfpea, western snowberry **Photo 9, Page B-5**
Site 2	Loamy Overflow R054XY023ND	Pad Site	1,910	NW 4%	Green needlegrass, big bluestem, western wheatgrass, common yarrow, cudweed sagewort, mint, silverleaf scurfpea, poison ivy, prairie rose, western snowberry **Photo 10 & 11, Page B-5 & B-6**
Site 3	Loamy Overflow R054XY023ND	Pad Site	1,896	NE 3%	Green needlegrass, Kentucky bluegrass, little bluestem, common yarrow, cudweed sagewort, green sagewort, silverleaf scurfpea, western snowberry silver buffaloberry **Photo 12, Page B-6**
Site 4	Loamy R054XY031ND	Pad Site	1,900	North 2%	Blue grama, needleandthread, green needlegrass, common yarrow, green sagewort, cudweed sagewort, silver buffaloberry, western snowberry **Photo 13 & 14, Page B-6**
Site 5	Thin Loamy R054XY038ND	Pad Site	1,912	East 5%	Blue grama, sideoats grama, thickspike wheatgrass, needleandthread, green sagewort, cudweed sagewort, silverleaf scurfpea, green rabbitbrush

Vegetation Sample Sites	Ecological Soil Type (reference ID)	Location	Approx. Elevation (feet)	Aspect & Slope	Dominant Plant Species[1] Photo Numbers in App. B[2]
					Photo 15 & 16, Page B-6
Access Road (View only)	---	Access Road	---	---	Blue grama, Kentucky bluegrass, green needlegrass, needleand thread, cudweed sagewort, green sagewort, common yarrow, silverleaf scurfpea, western snowberry **Photo 3, Page B-4**

[1]See Appendix C for more detailed information on species encountered at each site and for scientific names.
[2] General site photographs can be found on pages B-4 through B-6 in Appendix B.

At the proposed GeorgeBlackHawk 21X-6 project site, six vegetative site inventories were conducted on July 18, 2010 (Figure 3.8). Two distinct ecological sites were identified in the project area: Loamy (5 locations) and Loamy Overflow (1 location) (Figure 3.8, Table 3.8c).

Table 3.9c: ***Summary of vegetation sample sites at the proposed GeorgeBlackHawk 21X-6 project area.***

Vegetation Sample Sites	Ecological Soil Type (reference ID)	Location	Approx. Elevation (feet)	Aspect & Slope	Dominant Plant Species[1] Photo Numbers in App. B[2]
Site #1	Loamy R054XY031ND	Pad Site	1,922	SW 4%	Needleandthread grass, Kentucky bluegrass, prairie junegrass, cudweed sagewort, green sagewort, silverleaf scurfpea, prairie cone flower, fringed sagewort, western snowberry **Photo 9, Page B-8**
Site #2	Loamy R054XY031ND	Pad Site	1,910	North 9%	Green needlegrass, Kentucky bluegrass, prairie Junegrass, little bluestem, cudweed sagewort, green sagewort, fringed sagewort, western snowberry, silver buffaloberry **Photo 10 & 11, Page B-8**
Site #3	Loamy Overflow R05XY023ND	Pad Site	1,900	North 9%	Green needlegrass, prairie sandreed, porcupine grass, cudweed sagewort, green sagewort, silverleaf scurfpea, prairie rose, western snowberry **Photo 12 & 13, Page B-8 & B-9**
Site #4	Loamy R054XY031ND	Pad Site	1,915	North 1%	Prairie sandreed, green needlegrass, porcupine grass, needleandthread grass, cudweed sagewort, green sagewort, prairie rose, western snowberry **Photo 14 & 15, Page B-9**
Site #5	Loamy R054XY031ND	Pad Site	1,919	NW 1%	Green needlegrass, Kentucky bluegrass, needleandthread grass, prairie sandreed, cudweed sagewort, silverleaf scurfpea, prairie rose, western snowberry **Photo 16, Page B-9**
Access #6	Loamy R054XY031ND	Access Road	1,911	North 2%	Needleandthread grass, Kentucky bluegrass, prairie junegrass, cudweed sagewort, green sagewort, silverleaf scurfpea, fringed sagewort, western snowberry **Photo 17 & 18, Page B-9**

[1]See Appendix C for more detailed information on species encountered at each site and for scientific names.
[2] General site photographs can be found on pages B-7 through B-9 in Appendix B.

The following are brief descriptions (NRCS 2004) of the five types of ecological sites found in the proposed Grinnell 41X-6, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas. Photographs of each site are in Appendix B and worksheets for each ecological site are in Appendix C.

Loamy Ecological Site
Loamy ecological sites occur on gently undulating to rolling sedimentary uplands such as alluvial fans, alluvial flats, and hillsides. These sites are well drained and water is the limiting factor to vegetative production. Typically the Historic Climax Plant Community (HCPC) for loamy ecological site types is western wheatgrass/green needlegrass community type. The potential vegetative composition for this community type is estimated at roughly 85% graminoids, 10% forbs, and 5% shrubs. The majority (80%) of plant growth occurs in May, June, and July. Although dependent upon site specific conditions, annual vegetative productivity can be expected to range from 1,400 to 3,400 pounds per acre (NRCS 2004).

Loamy Overflow Ecological Site
Loamy overflow sites were found primarily within draws and swales. The HCPC for this site usually has a plant community consisting primarily of western snowberry, Kentucky bluegrass, needlegrasses, and blue grama. This is a more productive site primarily because draws and swales receive more water. Poison Ivy is common on this site and other commonly found forbs include cudweed sagewort, goldenrod, purple prairie clover, western yarrow, silverleaf scurfpea, and black samson. Extended periods without grazing or fire would result in a plant community having high litter levels, which then favors the increase in Kentucky bluegrass. In the absence of grazing or fire, shrubs such as western snowberry and chokecherry would also likely increase and eventually dominate the site. The HCPC composition is 85% graminoids, 10% forbs and 5% shrub. Roughly 80% of the growth occurs from May to July. Although dependent upon site specific conditions, annual vegetative productivity can be expected to range from 2,400 to 4,000 pounds per acre (NRCS 2004).

Thin Loamy Ecological Site
The HCPC for this site is composed of needlegrass, little bluestem, western wheatgrass, cudweed sagewort, needleleaf sedge, fringed sagewort, western yarrow, and silverleaf scurfpea. This plant community is relatively stable and creates a competitive advantage that often prevents other species from establishing. This site is less productive than other ecological sites and is more prone to accelerated runoff and soil erosion. Soil erosion can become critical and require mitigation or conservation measures to prevent erosion. The HCPC for this site is 85% graminoid, 10% forbs, and 5% shrubs. Roughly 85% of the annual growth occurs from May to July. Although dependent upon site specific conditions, annual vegetative productivity can be expected to range from 700 to 2,400 pounds per acre (NRCS 2004).

Thin Claypan Ecological Site
The Thin Claypan ecological sites occurs on gently undulating to rolling sedimentary uplands such as alluvial fans, alluvial flats, hills, and knolls. These sites are moderately well to well drained and formed in soft sandstone, siltstone, shales, and alluvium. Water is the limiting factor to vegetative production. Typically the HCPC for the thin claypan ecological site type is a western wheatgrass, thickspike wheatgrass, and blue grama community type. The potential vegetative composition for this community type is estimated at roughly 85% gramanoids, 10% perennial forbs, and 5% shrubs. The majority (79 %) of plant growth occurs in May through July. Although dependent upon site specific conditions, annual vegetative productivity can be expected to range from 400 to 1,200 pounds per acre (NRCS 2004).

3.9.2 Vegetative Species
The Grinnell 41X-1 well pad site is located on rangeland. The most commonly encountered plant species included: blue grama, needleandthread grass, green needlegrass, Kentucky bluegrass, western wheatgrass, cudweed sagewort, green sagewort, silverleaf scurfpea, prairie coneflower, goldenrod,

scentless mayweed black samson, fringed sagewort, common yarrow, prairie rose, western snowberry, and poison ivy. A comprehensive plant list for the project area was compiled during the July 19, 2010 site visit (Table 3.9d). No State sensitive plant species were found on Grinnell 41X-1 during the site visit (Table 3.9d).

The Grinnell 34X-33 well pad site is located on rangeland. The most commonly encountered plant species included: blue grama, western wheatgrass, needleandthread, Kentucky bluegrass, green needlegrass, cudweed sagewort, green wagewort, silverleaf scurfpea, common yarrow, poison ivy, prairie rose, and western snowberry. A comprehensive plant list for the project area was compiled during the July 17-18, 2010 site visit (Table 3.9e). No State sensitive plant species were found on Grinnell 34X-33 during the site visit (Table 3.9e).

The GeorgeBlackhawk 21X-6 well pad site is located on rangeland. The most commonly encountered plant species found at these sample locations included: needleandthread grass, Kentucky bluegrass, green needlegrass, western wheatgrass, cudweed sagewort, green sagewort, common yarrow, silverleaf scurfpea, prairie coneflower, goldenrod, fringed sagewort, prairie rose, and western snowberry. A comprehensive plant list for the project area was compiled during the July 18, 2010 site visit (Table 3.9f). No State sensitive plant species were found on GeorgeBlackhawk 21X-6 during the site visit (Table 3.9f).

3.9.3 Invasive Species

As defined by Executive Order 13112, an "invasive species" is that which is 1) a non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health (North Dakota Department of Agriculture [NDDA] 2009).

Within the proposed Grinnell 41X-1 project site, nine exotic and invasive plants are present: mustard (*Brassica* spp.), smooth brome (*Bromus inermis*), Japanese brome (*Bromus japonicus*), yellow sweetclover (*Melilotus officinalis*), Kentucky bluegrass (*Poa pratensis*), tall tumblemustard (*Sisymbrium altissimum*), common dandelion (*Taraxacum officinale*), fanweed (*Thlaspi arvense*), and western salsify (*Tragopogon dubius*).

Within the proposed Grinnell 34X-33 project site, 19 exotic and invasive plants are present: bull thistle (*Cirsium vulgare*), mustard (*Brassica* spp.), smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*), false flax (*Camelina* spp.), lamb's-quarter (*Chenopodium album*), flixweed (*Descurainia sophia*), prickly lettuce (*Lactuca serriola*), pepperweed (*Lepidium* spp.), yellow sweetclover (*Melilotus officinalis*), scotch thistle (*Onopordum acanthium*), Kentucky bluegrass (*Poa pratensis*), Russian thistle (*Salsola kali*), tall tumblemustard (*Sisymbrium altissimum*), corn spurry (*Spergula arvensis*), common dandelion (*Taraxacum officinale*), fanweed (*Thlaspi arvense*), and western salsify (*Tragopogon dubius*).

Within the proposed GeorgeBlackHawk 21X-6 project site, 10 exotic and invasive plants are present: bull thistle (*Cirsium vulgare*), mustard (*Brassica* spp.), smooth brome (*Bromus inermis*), false flax (*Camelina* spp.), pepperweed (*Lepidium* spp.), yellow sweetclover (*Melilotus officinalis*), Kentucky bluegrass (*Poa pratensis*), common dandelion (*Taraxacum officinale*), fanweed (*Thlaspi arvense*), and western salsify (*Tragopogon dubius*).

Table 3.9d: ***Plant species observed in each Ecological Site and perimeter at the proposed Grinnell 41X-1 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	ACCESS SITE #6	PAD PERIMETER			
								SW	SE	NE	NW
GRASSES/GRASS-LIKES											
Aristida longiseta	red threeawn									X	
Bouteloua gracilis	blue grama	X	X	X	X	X	X	X	X	X	X
Bouteloua dactyloides	buffalograss						X			X	
Calamagrostis montanensis	plains reedgrass	X					X	X	X	X	X
Calamovilfa longifolia	prairie sandreed							X	X	X	X
Carex filifolia	threadleaf sedge			X					X	X	
Carex inops	sun sedge	X					X	X			X
Elymus caninus	bearded wheatgrass						X				
Elymus lanceolatus	thickspike wheatgrass			X			X	X	X	X	X
Hesperostipa comata	needleandthread grass	X	X	X	X	X	X	X	X	X	X
Koeleria macrantha	prairie junegrass	X	X	X				X	X	X	X
Muhlenbergia cuspidata	plains muhly				X					X	X
Nassella viridula	green needlegrass	X	X	X	X	X	X	X	X	X	X
Panicum virgatum	switchgrass		X								X
Pascopyrum smithii	western wheatgrass	X	X	X	X	X	X	X	X	X	X
Poa secunda	Sandberg bluegrass	X					X		X	X	X
Schizachyrium scoparium	little bluestem							X	X		X
Sporobolus heterolepis	prairie dropseed		X		X		X	X	X	X	X
FORBS											
Achillea millefolium	common yarrow	X	X				X				X
Agoseris glauca	false dandelion						X				
Allium ascalonicum	wild onion						X				
Anemone cylindrica[1]	candle anemone[1]										
Artemisia dracunculus	green sagewort	X	X			X	X				X
Artemisia ludoviciana	cudweed sagewort	X	X	X	X	X	X				X
Astragalus crassicarpus[1]	groundplum[1]		X				X				X
Astragalus spp.	milkvetch		X				X				X
Aster falcatus	white prairie aster	X				X	X	X	X	X	X
Campanula rotundifolia	harebell										X
Castilleja acuminata	lance-leaved paintbrush		X								
Cirsium flodmanii	Flodman's thistle			X		X	X	X			
Cirsium undulatum	wavyleaf thistle	X	X				X				X
Cleome serulata	beeplant		X								X
Dalea purpurea	purple prairie clover	X					X	X	X	X	X
Echinacea angustifolia	black samson		X					X	X	X	X

Table 3.9d (continued): ***Plant species observed in each Ecological Site and perimeter at the proposed Grinnell 41X-1 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	ACCESS SITE #6	PAD PERIMETER			
								SW	SE	NE	NW
Erigeron strigosus[1]	daisy fleabane[1]										
Eriogonum spp.	buckwheat										X
Galium boreale	northern bedstraw							X			X
Gaillardia aristata	blanket flower		X		X					X	
Geum triflorum	prairie smoke		X		X	X		X	X	X	X
Gaura coccinea[1]	scarlet gaura[1]										
Glycyrrhiza lepidota	American licorice					X		X			
Grindelia squarrosa	curlycup gumweed	X				X	X		X	X	
Hedysarim alpinum	hedysarim										X
Helianthus spp.	sunflower		X			X		X	X	X	X
Heterotheca villosa	hairy goldenaster							X	X	X	X
Lactuca pulchella[1]	blue lettuce[1]										
Liatris punctata	dotted gayfeather		X				X	X	X	X	X
Lilium philadelphicum	western red lily	X	X			X	X	X	X	X	X
Lesquerella arenosa	sand bladderpod		X	X			X	X			X
Lithosperum ruderale	ivory stoneseed		X					X			
Lomatium spp.	biscuitroot		X					X	X	X	X
Lygodesmia juncea	rush skeletonweed								X		X
Mentha spp.	mint		X					X	X	X	X
Phlox hoodii	hood phlox								X	X	
Psoralea argophylla	silverleaf scurfpea	X	X	X	X	X	X	X	X	X	X
Ratibida columnifera	prairie coneflower	X	X	X	X	X	X	X	X	X	X
Rudbeckia hirta	blackeyed susan										X
Senecio vulgaris	common groundsel		X		X				X		X
Solidago rigida[1]	stiff goldenrod[1]	X	X	X	X	X	X	X	X	X	X
Solidago spp.	goldenrod	X	X	X	X	X	X	X	X	X	X
Sphaeralcea coccinea	scarlet globemallow							X			
Tradescantia bracteata[1]	bracted spiderwort[1]										
Trifolium spp.	clover		X								X
Tripleurospermum perforata	scentless mayweed	X	X	X	X	X	X	X	X	X	X
Vicia americana	American vetch								X	X	
Wyethia spp.	mules-ear							X			
Zigadenus elegans	deathcamas							X			
SELAGINELLA (LESSER CLUB MOSS)											
Selaginella densa	lesser clubmoss									X	

Table 3.9d (continued): ***Plant species observed in each Ecological Site and perimeter at the proposed Grinnell 41X-1 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	ACCESS SITE #6	PAD PERIMETER			
								SW	SE	NE	NW
CACTUS											
Mamillara vivpara	pincushion cactus	X							X		
INVASIVE FORBS & GRASSES											
Brassica spp.	mustard				X					X	
Bromus inermis	smooth brome			X				X	X		
Bromus japonicus[3]	Japanese brome[3]										
Cirsium arvense[2]	**Canada thistle**[2]										
Euphorbia esula[2]	**leafy spurge**[2]										
Melilotus officinalis	yellow sweetclover	X	X	X			X		X	X	X
Poa pratensis	Kentucky bluegrass	X	X	X	X	X	X	X	X	X	X
Sisymbrium altissimum	tall tumblemustard	X					X			X	
Taraxacum officinale	common dandelion			X				X	X	X	X
Thlaspi arvense	fanweed	X					X				
Tragopogon dubius	western salsify	X				X	X	X	X	X	X
SHRUBS/TREES											
Artemisia cana	silver sagebrush							X			X
Artemisia frigida	fringed sagewort	X	X	X	X	X		X	X	X	X
Ceratoidies lanata	winterfat	X					X				
Rosa arkansana	prairie rose		X		X	X		X	X	X	X
Shepherdia argentea	silver buffaloberry										X
Symphoricarpos albus	common snowberry								X		
Symphoricarpos occidentalis	western snowberry	X	X	X	X	X		X	X	X	X
Toxicodendron rydbergii	poison ivy		X		X			X	X	X	X

[1] Observed on the proposed well pad and access road by PBS&J on July 14, 2010.
[2] Noxious weeds observed and mapped on the proposed pad and access road and along the existing road by PBS&J on July 14, 2010 (see Figure 3.7a).
[3] Observed and mapped by PBS&J on the proposed pad on July 14, 2010 (see Figure 3.7a).

Table 3.9e: ***Plant species observed in each Ecological Site and perimeter at the proposed Grinnell 34X-33 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	PAD PERIMETER			
							SW	SE	NE	NW
GRASSES/GRASS-LIKES										
Andropogon gerardii	big bluestem		X				X		X	
Bouteloua gracilis	blue grama	X		X	X	X	X	X	X	X
Bouteloua curtipendula	sideoats grama					X	X			X
Bouteloua dactyloides	buffalograss					X	X			X
Calamagrostis montanensis	plains reedgrass					X				X
Bromus inermis	smooth brome			X	X		X	X		
Calamovilfa longifolia	prairie sandreed								X	
Carex filifolia	threadleaf sedge	X	X		X	X				
Carex inops	sun sedge						X			
Carex pensylvanica	pen sedge					X				X
Elymus canadensis	Canada wildrye								X	
Elymus caninus	bearded wheatgrass		X				X		X	
Elymus lanceolatus	thickspike wheatgrass	X				X	X		X	
Elymus trachycaulus	slender wheatgrass							X		
Equisetum hyemale	scouringrush horsetail								X	
Hesperostipa comata	needleandthread grass	X		X	X		X	X	X	X
Hesperostipa spartea	porcupine grass		X				X		X	
Koeleria macrantha	prairie junegrass	X				X	X	X	X	X
Muhlenbergia cuspidata	plains muhly					X			X	X
Nassella viridula	green needlegrass		X	X	X	X	X	X	X	X
Phalaris arundinacea	reed canarygrass							X	X	
Panicum virgatum	switchgrass		X				X		X	
Pascopyrum smithii	western wheatgrass	X	X		X	X	X	X	X	X
Poa secunda	Sandberg bluegrass		X			X	X	X	X	X
Schizachyrium scoparium	little bluestem			X	X		X	X		
Sorghastrum nutons	Indian grass		X				X		X	X
Spartina pectinata	prairie cordgrass								X	X
Sporobolus heterolepsis	prairie dropseed	X				X	X			X
Juncus balticus	baltic rush		X				X		X	
Spartina pectinata	prairie cordgrass								X	X
Sporobolus heterolepsis	prairie dropseed	X				X	X			X
Juncus balticus	baltic rush		X				X		X	

Table 3.9e (continued): ***Plant species observed in each Ecological Site and perimeter at the proposed Grinnell 34X-33 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	PAD PERIMETER			
							SW	SE	NE	NW
FORBS										
Achillea millefolium	common yarrow	X	X	X	X	X	X	X	X	X
Agoseris glauca	false dandelion	X				X	X	X	X	X
Agrimonia striata	roadside agrimonia					X		X		
Allium ascalonicum	wild onion				X	X	X	X	X	X
Arabis spp.	rock cress								X	
Antennaria rosea	rose pussytoes					X				X
Artemisia dracunculus	green sagewort	X		X	X	X	X	X	X	X
Artemisia ludoviciana	cudweed sagewort	X	X	X	X	X	X	X	X	X
Asclepias spp.	milkweed								X	
Astragalus crassicarpus	groundplum milkvetch		X			X	X	X		X
Astragalus spp.	milkvetch		X			X	X			X
Balsamorhiza macrophylla	cutleaf balsamroot								X	
Balsamorhiza sagittata	arrowleaf balsamroot									X
Aster falcatus	white prairie aster	X	X	X	X	X	X	X	X	X
Campanula rotundifolia	harebell					X	X		X	
Castilleja acuminata	lance-leaved paintbrush								X	X
Cirsium flodmanii	Flodman's thistle	X	X			X	X	X	X	X
Cirsium undulatum	wavyleaf thistle		X	X	X		X	X	X	X
Cleome serulata	beeplant								X	X
Dalea purpurea	purple prairie clover	X			X		X	X	X	X
Echinacea angustifolia	black samson	X		X	X	X	X	X	X	X
Erigeron strigosus[1]	daisy fleabane[1]									
Eriogonum spp.	buckwheat					X			X	
Erodium cicutarium	redstem filaree							X		
Galium boreale	northern bedstraw		X							
Geranium richardsonii	Richardson's geranium								X	
Geum triflorum	prairie smoke	X		X	X	X	X	X		X
Glaux spp.	milkwort			X					X	
Glycyrrhiza lepidota	American licorice					X				
Grindelia squarrosa	curlycup gumweed			X		X			X	X
Helianthus spp.	sunflower							X		
Heterotheca villosa	hairy goldenaster			X		X	X	X	X	X
Lappula occidentalis	western sticktight					X		X		
Liatris punctata	dotted gayfeather		X	X		X	X	X	X	X

Table 3.9e (continued): ***Plant species observed in each Ecological Site and perimeter at the proposed Grinnell 34X-33 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	PAD PERIMETER			
							SW	SE	NE	NW
Lilium philadelphicum	western red lily	X		X		X	X	X	X	X
Lomatium spp.	biscuitroot	X						X	X	
Lupinus argenteus	silvery lupine							X	X	
Lygodesmia juncea	Rush skeletonweed		X			X				
Mentha spp.	mint		X				X	X	X	X
Oligoneoron rigidum	stiff goldenrod								X	
Pentemon spp.	penstemon			X				X		X
Phlox hoodii	hood phlox					X		X	X	
Plantago patagonica	woolly indianwheat				X	X	X	X	X	X
Psoralea argophylla	silverleaf scurfpea	X	X	X	X	X	X	X	X	X
Ranunculus rhombodieus	prairie buttercup					X				X
Ratibida columnifera	prairie coneflower	X		X	X	X				
Rudbeckia hirta	blackeyed susan							X	X	
Senecio vulgaris	common groundsel			X			X	X	X	X
Solidago spp.	goldenrod		X	X	X	X	X	X	X	X
Sphaeralcea coccinea	scarlet globemallow					X		X		X
Trifolium spp.	clover	X		X			X	X	X	X
Tripleurospermum perforata	scentless mayweed	X	X	X	X			X		X
Urtica dioica	stinging nettle	X								
Vicia americana	American vetch	X		X			X	X	X	X
Wyethia spp.	mules-ear									X
Zigadenus elegans	deathcamas								X	
SELAGINELLA (LESSER CLUB-MOSS)										
Selaginella densa	clubmoss							X	X	
INVASIVE FORBS & GRASSES										
Cirsium vulgare	bull thistle				X				X	X
Cirsium arvense[1]	**Canada thistle**[1]									
Brassica spp.	mustard	X		X			X	X	X	X
Bromus inermis	smooth brome			X	X			X		
Bromus tectorum	cheatgrass							X		
Camelina spp.	false flax	X							X	X
Chenopodium album	lambsquarter									X
Descurainia sophia	flixweed								X	
Lactuca serriola	prickly lettuce				X			X		
Lepidium spp.	pepperweed		X	X				X	X	
Melilotus officinalis	yellow sweetclover							X		

Table 3.9e (continued): ***Plant species observed in each Ecological Site and perimeter at the proposed Grinnell 34X-33 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	PAD PERIMETER			
							SW	SE	NE	NW
Onopordum acanthium	scotch thistle								X	
Poa pratensis	Kentucky bluegrass	X	X	X	X	X	X	X	X	X
Salsola kali	Russian thistle							X		
Sisymbrium altissimum	tall tumblemustard	X								
Spergula arvensis	corn spurry								X	
Taraxacum officinale	common dandelion	X				X				
Thlaspi arvense	fanweed				X					
Tragopogon dubius	western salsify		X	X	X	X				
SHRUBS/TREES										
Artemisia cana	silver sagebrush						X			
Artemisia frigida	fringed sagewort	X		X	X	X	X	X	X	X
Ceratoidies lanata	winterfat					X				
Chrysothamnus vicidiflorus	green rabbitbrush					X		X	X	
Crataegus spp.	hawthorn								X	
Fraxinus pennsylvanica	green ash								X	X
Gutierrezia sarothrae	broom snakeweed							X		
Potentilla fruticosa	shrubby cinquefoil				X				X	
Rosa arkansana	prairie rose		X	X						
Prunus virginiana	chokecherry								X	X
Ribes aureum	golden current								X	X
Shepherdia argentea	silver buffaloberry			X	X				X	X
Symphoricarpos albus	common snowberry								X	
Symphoricarpos occidentalis	western snowberry	X	X				X	X	X	X
Toxicodendron rydbergii	poison ivy	X		X	X		X	X	X	X

[1] Noxious weed observed and mapped along the existing road by PBS&J on July 13, 2010 (see Figure 3.7a).

Table 3.9f: ***Plant species observed in each Ecological Site and perimeter at the proposed GeorgeBlackhawk 21X-6 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	ACCESS SITE #6	PAD PERIMETER			
								SW	SE	NE	NW
GRASSES/GRASS-LIKES											
Andropogon gerardii	big bluestem		X				X			X	X
Bouteloua curtipendula	sideoats grama		X				X	X	X	X	X
Calamagrostis montanensis	plains reedgrass	X				X	X	X	X	X	X
Calamovilfa longifolia	prairie sandreed	X		X		X	X	X	X	X	X
Carex filifolia	threadleaf sedge		X					X	X	X	X
Carex inops	sun sedge		X				X			X	
Carex pensylvanica	pen sedge	X				X	X			X	
Cirsium flodmanii	Flodman's thistle	X		X		X	X	X	X	X	X
Cirsium undulatum	wavyleaf thistle			X	X				X	X	
Elymus lanceolatus	thickspike wheatgrass		X					X	X	X	X
Hesperostipa comata	needleandthread grass	X			X	X	X	X	X	X	X
Hesperostipa spartea	porcupine grass			X					X	X	X
Hordeum jubatum	foxtail barley						X	X			
Koeleria macrantha	prairie junegrass	X	X		X	X	X	X	X	X	X
Lappula occidentaili	western sticktight						X				
Muhlenbergia cuspidata	plains muhly									X	
Nassella viridula	green needlegrass	X	X	X	X	X	X	X	X	X	X
Panicum virgatum	switchgrass				X				X	X	
Pascopyrum smithii	western wheatgrass	X	X		X	X	X	X	X	X	X
Poa secunda	Sandberg bluegrass	X		X		X	X	X	X	X	X
Schizachyrium scoparium	little bluestem		X				X	X	X	X	X
Sporobolus heterolepsis	prairie dropseed									X	
FORBS											
Achillea millefolium	common yarrow	X	X			X	X	X	X	X	X
Agoseris glauca	false dandelion									X	
Agrimonia striata	roadside agrimonia							X			
Allium ascalonicum	wild onion	X			X	X	X		X	X	
Artemisia dracunculus	green sagewort	X	X	X	X	X	X	X	X	X	X
Artemisia ludoviciana	cudweed sagewort	X	X	X	X	X	X	X	X	X	X
Asclepias pumila[1]	plains milkweed[1]										
Asclepias spp.	milkweed										X
Astragalus crassicarpus	groundplum milkvetch						X		X		
Astragalus spp.	milkvetch	X			X	X	X	X	X	X	X
Aster falcatus	white prairie aster	X	X	X		X	X	X	X	X	X

Table 3.9f (continued): ***Plant species observed in each Ecological Site and perimeter at the proposed GeorgeBlackhawk 21X-6 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	ACCESS SITE #6	PAD PERIMETER			
								SW	SE	NE	NW
Campanula rotundifolia	harebell				X			X			
Dalea purpurea	purple prairie clover	X	X	X	X	X	X	X	X	X	X
Echinacea angustifolia	black samson	X	X	X	X	X	X	X	X	X	X
Erigeron strigosus[1]	daisy fleabane[1]										
Eriogonum spp.	buckwheat						X				X
Galium boreale	northern bedstraw	X				X	X		X	X	
Geum triflorum	prairie smoke	X		X		X	X	X	X	X	X
Glaux spp.	milkwort		X						X	X	
Glycyrrhiza lepidota[1]	wild licorice[1]										
Grindelia squarrosa	curlycup gumweed									X	
Hackelia floribunda[1]	many-flowered stick seed[1]										
Helianthus spp.	sunflower	X		X		X	X	X	X	X	X
Heterotheca villosa	hairy goldenaster				X					X	
Liatris punctata	dotted gayfeather	X				X	X	X	X	X	X
Lilium philadelphicum	western red lily	X	X	X	X	X	X	X	X	X	X
Linum lewisii[1]	blue flax[1]										
Lesquerella arenosa	sand bladderpod				X				X		X
Lomatium spp.	biscuitroot			X						X	X
Lupinus argenteus	silvery lupine									X	
Lygodesmia juncea	rush skeletonweed	X				X	X	X	X	X	X
Mentha spp.	mint			X						X	X
Monardia fistulosa[1]	wild bergamot										
Oligoneoron rigidum	stiff goldenrod			X							
Plantago patagonica	woolly indianwheat				X					X	X
Psoralea argophylla	silverleaf scurfpea	X	X	X	X	X	X	X	X	X	X
Ranunculus rhombodieus	prairie buttercup		X							X	
Ratibida columnifera	prairie coneflower	X	X	X	X	X	X	X	X	X	X
Rudbeckia hirta	blackeyed susan							X		X	
Senecio vulgaris	common groundsel				X					X	X
Solidago rigida[1]	stiff goldenrod[1]										
Solidago spp.	goldenrod	X	X			X	X	X	X	X	X
Sphaeralcea coccinea	scarlet globemallow						X		X		
Trifolium spp.	clover	X			X	X	X	X	X	X	X
Vicia americana	American vetch					X			X	X	

Table 3.9f (continued): ***Plant species observed in each Ecological Site and perimeter at the proposed GeorgeBlackhawk 21X-6 project area.***

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	ACCESS SITE #6	PAD PERIMETER			
								SW	SE	NE	NW
INVASIVE FORBS & GRASSES											
Cirsium arvense[2]	**Canada thistle**[2]										
Cirsium vulgare	bull thistle				X	X			X	X	
Convolvulus arvensis[2]	**field bindweed**[2]										
Brassica spp.	mustard				X			X	X	X	X
Bromus inermis	Japanese brome						X	X			
Camelina spp.	false flax		X						X		
Lepidium spp.	pepperweed						X				
Melilotus officinalis	yellow sweetclover						X	X	X		X
Poa pratensis	Kentucky bluegrass	X	X		X	X	X	X	X	X	X
Taraxacum officinale	common dandelion	X					X	X	X	X	X
Thlaspi arvense	fanweed	X					X		X	X	
Tragopogon dubius	western salsify	X					X	X	X	X	X
SHRUBS/TREES											
Artemisia cana	silver sagebrush	X		X	X		X	X	X	X	X
Artemisia frigida	fringed sagewort	X	X	X	X		X	X	X	X	X
Prunus virginiana	chokecherry									X	X
Ribes aureum	golden currant									X	X
Rosa arkansana	prairie rose	X	X	X	X	X	X	X	X	X	X
Rosa woodsii	Wood's rose									X	X
Shepherdia argentea	silver buffaloberry	X	X					X	X	X	X
Symphoricarpos albus	common snowberry							X	X	X	X
Symphoricarpos occidentalis	western snowberry	X	X	X	X	X	X	X	X	X	X
Toxicodendron rydbergii	poison ivy	X	X			X	X	X	X	X	X

[1] Observed on the proposed well pad and access road by PBS&J on July 13, 2010.

[2] Noxious weeds observed and mapped along the existing road and proposed access road by PBS&J on July 13, 2010 (see Figure 3.7a).

3.9.4 Noxious Weeds

The State of North Dakota defines a "Noxious weed" as any plant propagated by either seed or vegetative parts which is determined by the commissioner after consulting with the North Dakota State University Extension Service county agent or the county weed board to determine if the plant is harmful to public health, crops, livestock, land, or other property (ND Century Code 63-01.1-02) (NDDA 2009). Noxious weeds can spread easily to the detriment of public health, indigenous plant communities, crops, livestock, and recreational areas, and to the detriment of natural or agricultural systems management. In North Dakota, twelve species have been declared noxious under the North Dakota Century Code (Chapter 63-01.1) (Table 3.9g). However, only five noxious weeds are known to occur in Dunn County (Table 3.9g).

Within the project boundaries, three noxious weeds are present: Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), and leafy spurge (*Euphorbia esula*) (Table 3.9g; Figure 3.7b). Canada thistle was found in at least ten dense patches along approximately 2,410 linear feet of the existing road. One patch of field bindweed was mapped on or near the proposed access road for GeorgeBlackHawk 21X-6. A few, young sprouts of leafy spurge were found on or near the proposed Grinnell 41X-1 well pad. It appears that the leafy spurge shoots had recently colonized the area.

Table 3.9g: ***North Dakota noxious Weeds present in Dunn County and in vicinity of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.***

Scientific Name	Common Name	Present in Dunn County?	Present in vicinity of project site?		
			Grinnell 41X-1	Grinnell 34X-33	GeorgeBlackHawk 21X-6
Artemisia absinthium	absinth wormwood	Yes	No	No	No
Carduus nutans	musk thistle	No	No	No	No
Centaurea diffusa	diffuse knapweed	No	No	No	No
Centaurea maculosa	spotted knapweed	No	No	No	No
Centaurea repens	Russian knapweed	No	No	No	No
Centaurea solstitialis	yellow starthistle	No	No	No	No
Cirsium arvense	Canada thistle	Yes	**Yes**	**Yes**	**Yes**
Convolvulus arvensis	field bindweed	Yes	No	No	**Yes**
Euphorbia esula	leafy spurge	Yes	**Yes**	No	No
Linaria dalmatica	Dalmation toadflax	Yes	No	No	No
Lythrum salicaria	purple loosestrife	No	No	No	No
Tamarix spp. [complex]	saltcedar	Yes	No	No	No

3.9.5 Vegetation Impacts

Construction of the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 well pads and roads would impact all four types of ecological sites.

For the proposed Grinnell 41X-1 project area 6.25 surface acres would be permanently removed and almost 0.57 acre would be temporarily removed from vegetative productivity. Based on the ecological sites this would result in a loss of between 7,200 and 12,800 pounds of forage available to livestock and wildlife per year. Actual annual forage reductions would depend on the timing and amount of precipitation the site receives each year.

For the proposed Grinnell 34X-33 project area almost 6.6 surface acres would be permanently removed and almost 0.48 acre would be temporarily removed from vegetative productivity. Based on the ecological sites this would result in a loss of between 7,000 and 17,000 pounds of forage available to livestock and wildlife per year. Actual annual forage reductions would depend on the timing and amount of precipitation the site receives each year.

For the proposed GeorgeBlackHawk 21X-6 well pad almost 6.9 acres of soil would be permanently impacted and almost 0.49 acre would be temporarily removed from vegetative productivity. Based on the ecological sites this would result in a loss of between 9,400 and 21,000 pounds of forage available to livestock and wildlife per year. Actual annual forage reductions would depend on the timing and amount of precipitation the site receives each year.

Soil compaction by heavy equipment could hinder the re-growth of vegetation and the revegetation efforts because it reduces the ability of water to percolate through the soil and reduces air spaces for water to occupy (Goodwin and Sheley 2003). Broadcast seeding on top of compacted soil could cause more seeds to blow away, be eaten by predators, or be eroded away by precipitation (Goodwin and Sheley 2003). Where possible, seeding by drilling is recommended (Table 3.9h).

Ground disturbing activities could increase the acreage of the three noxious and 17 exotic weeds found at the Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project sites. The potential disturbance of almost 21 acres could allow noxious and invasive plants to spread and for new species to be introduced. Controlling the existing noxious and exotic weed populations through hand-pulling, herbicide, and/or mowing, before ground disturbing activities occur would greatly reduce their ability to spread and colonize disturbed ground. Invasive and noxious weeds often out-compete native plants because they grow in the absence of population controls. Their populations reduce the quality and quantity of forage for game/livestock and crop production, reduces species diversity in the landscape, and generally does not provide habitat for native fauna (NDDA 2009).

Table 3.9h: ***Native seed mix to be used in reclamation at the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project sites.***

Plant Species	PLS[1] (pound)	Composition
Western wheat Grass	2.4pls	30%
Green needlegrass	1.2pls	20%
Blue grama	0.2pls	10%
Sideoats grama	0.6pls	10%
Little bluestem	0.4pls	10%
Slender wheatgrass	0.5pls	10%
Prairie junegrass	0.1pls	10%
Total	**5.4pls**	**100%**

[1] pls = pure live seed measured by the pound.

3.9.6 Vegetative Mitigation

The following mitigation measures would be implemented to avoid, minimize and mitigate for impacts to vegetative resources in the project area.

- To maintain plant biodiversity, ground disturbance would be minimized to the extent that is necessary for the project. Equipment would work within the confines of the approved ROW and well pad area boundary.
- Topsoil that is removed would be stock-piled, and used in reclamation efforts.
- Severely compacted soil would be scarified or plowed to roughen the soil and increase germination rates (Goodwin and Sheley 2003). Soil scarification would be conducted by raking the soil with a ripper shank that is pulled behind a tractor, grader, or bulldozer.
- Areas stripped of topsoil would be reseeded with desirable native plant species and be reclaimed at the earliest practicable opportunity.
- Certified weed-free straw and seed would be used for all construction, seeding, and reclamation efforts.
- The APDs require the operator to control all noxious weeds within the project area (Appendix A).

Existing noxious weeds should be controlled prior to any ground-disturbing activities. Control measures could include using recommended herbicides, hand-pulling, applying bio-control, seeding, and/or planting of desirable native vegetation. Herbicides would be applied at the appropriate time(s) of year, in the appropriate weather condition, with the appropriate chemical, and at the appropriate rate. Spot treatment with applicable herbicides is suggested during appropriate plant growth cycles during 2011. Revegetation would not be necessary with this method.

- All woody material would be mulched, stored with the topsoil, and spread with the topsoil onto disturbed surfaces during reclamation.

North Dakota Parks and Recreation recommends that impacted areas be revegetated with species native to the project area (NDPR 2009) (Appendix F). Further, the USFWS recommends that a diverse mixture of native cool and warm season grasses and forbs be planted (USFWS 2009d). Seed mixes containing a diversity of plant habits and species have a greater chance of resisting invasion by non-native plants and eventually become more ecologically beneficial (USFWS 2009d). The appropriate seed mix should be designed to meet the objective of the revegetation effort. The objective for the proposed project would be to restore the plant community to its prior status with minimal erosion and weed invasion. This would be accomplished by using a quick establishing cover crop of oats or barley at a rate of 10 lbs/acre combined with a native seed mixture at a rate of 5.4 lbs of pure live seed per acre. The recommended seed mix, developed by Darryl Turcotte of the BIA, is comprised of native grasses to the area (Table 3.9d). A native forb component is generally encouraged in order to restore the plant community to its prior status. Dependent upon commercial availability, potential native forbs that could be added to the grassland seed mix include, but are not limited to: black samson (*Echinacea angustifolia*), purple prairie clover (*Dalea purpurea*), dotted gayfeather (*Liatris punctata*), and candle anemone (*Anemone cylindrica*). If forbs are included in the seed mix they should be in addition to the seeding rate of 5.4 pls/acre specified in Table 3.9h.

3.10 Cultural Resources

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for cultural resources in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

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.

Cultural resource inventories of these well pads and access roads were conducted by personnel of Kadrmas, Lee & Jackson, Inc., using an intensive pedestrian methodology. For the Grinnell 41x-1 project approximately 12.1 acres were inventoried on July 1, 2010 (Klinner 2010a). One archaeological site was located that may 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, as the archaeological site will be avoided. This determination was communicated to the THPO on December 27, 2010; however, the THPO did not respond within the allotted 30 day comment period. For the Grinnell 34x-33 project approximately 13.7 acres were inventoried on July 7, 2010 (Klinner 2010b); and for the George Black Hawk 31x-6 project approximately 11 acres were inventoried on July 1, 2010 (Klinner 2010c). 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 these undertakings. This determination was communicated to the THPO on August 19, 2010, and the THPO concurred on August 25, 2010.

3.10.1 Cultural Resource Mitigation

The following mitigation measure would be implemented to avoid and mitigate for impacts to cultural resources in the project area.

- If cultural resources are discovered during construction or operation, XTO Energy, Inc. would immediately stop work, secure the affected site, and notify the BIA and THPO.
- Unexpected or inadvertent discoveries of cultural resources or human remains trigger mandatory federal procedures that include work stoppage and BIA consultation with all appropriate parties.
    - Following any such discovery, XTO Energy, Inc. would not resume construction or operations until written authorization to proceed was received from the BIA.
- **Project personnel are prohibited from collecting any artifacts or disturbing cultural resources in the area under any circumstances.**
- A cultural resource expert would be required to be onsite during construction.

3.11 Socio-Economics

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for social-economic resources in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas. The Proposed Action would occur on the FBIR; however, to provide a broad perspective for the region, the overlapping counties of Dunn, McKenzie, McLean, and Mountrail were evaluated and county statistics were compared with North Dakota state statistics.

The level of employment for a given area can be used to draw conclusions on the health and stability of the local economy. The U.S. Census Bureau and BIA Indian Labor Force Reports were used for employment and income data. In 2000, people on the FBIR had a lower median household income ($26,274) and a higher unemployment rate (6.4%) in comparison to the overlapping counties and the state (Table 3.11a). The Fort Berthold Reservation had a higher percentage (28%) of people living below the poverty level, when compared to the overlapping counties and the state. At the same time, populations on

or near the FBIR that are enrolled in the Three Affiliated Tribes had 47% of their population living below poverty with 51% being unemployed. The higher unemployment rate can be attributable to the lower employment-to-population ratio for American Indians.

The latest American Indian Population and Labor Force Report (BIA 2005) indicated that within the Three Affiliated Tribes, approximately 4,381 persons were available for work and 430 were not available for work. Of those available for work, 1,287 were employed and 3,094 were not employed (BIA 2005). Between 2000 and 2005, the unemployment rate increased from 51% to 71% and the percentage of persons living below poverty increased from 47% to 55%. Meanwhile, in 2005 a decrease in the unemployment rate occurred in Dunn (-3.4%) and McKenzie (-3.7%) counties and an increase was experienced in McLean (+5%) and Mountrail (+6%) counties and the State of North Dakota (+3.4%) (BLS 2005).

Table 3.11a: ***2000 employment and income data.***

Unit of Analysis	Per Capita Income	Median Household Income	Unemployment Rate	Persons Below Poverty Level
MHA Nation members[1]	No Data	No Data	51 %	47 %
Fort Berthold Reservation[2]	$ 10,291	$ 26,274	6.4 %	28.1 %
Dunn County[2]	$ 14,624	$ 30,015	4.0 %	17.5 %
McKenzie County[2]	$ 14,732	$ 29,342	4.1 %	17.2 %
McLean County[2]	$ 16,220	$ 32,337	3.2 %	13.5 %
Mountrail County[2]	$ 13,422	$ 27,098	3.4 %	19.3 %
North Dakota State[2]	$ 17,769	$ 34,604	3.0 %	11.9 %

[1] Source: BIA (2005).
[2] Source: USCB (2000).

The 2000 census and subsequent mathematical projections indicated that per capita income for residents of the FBIR is $10,291 or about 58% of the North Dakota per capita income of $17,769. Similarly, the median household income on the Fort Berthold reservation was $26,274 in 2000, or about 76% of the North Dakota median household income.

The number of people in North Dakota decreased slightly between 2000 and 2008 (Table 3.11b). The four counties surrounding the project area exhibited greater estimated decreases in population than exhibited at the state level in 2008 (Table 3.11b). Between the 1990 and 2000 censuses the population on the Fort Berthold Reservation increased by almost 10%. American Indians are the dominant group on the reservation and the dominant minority in Dunn, McKenzie, McLean, and Mountrail Counties, and at the State level (Table 3.11b).

Table 3.11b: ***North Dakota population trends at the Reservation, County, and State levels.***

Reservation, County, & State	Estimated 2008 Population	% of 2008 State Population	% Change, April 2000 – July 2008	Predominant Ethnic Group (2008)	Predominant Minority (2008)
Fort Berthold Reservation[1]	5,915 (in 2000)	0.92 (in 2000)	+ 9.8 (1990 to 2000)	American Indian (in 2000)	White (26.9%) (in 2000)
Dunn[2]	3,318	0.52	- 7.8	White	American Indian (14.1%)
McKenzie[2]	5,674	0.88	- 1.1	White	American Indian (22%)
McLean[2]	8,337	1.29	- 10.5	White	American Indian (7.0%)

Reservation, County, & State	Estimated 2008 Population	% of 2008 State Population	% Change, April 2000 – July 2008	Predominant Ethnic Group (2008)	Predominant Minority (2008)
Mountrail[2]	6,511	1.01	- 1.8	White	American Indian (34.9%)
Statewide[2]	641,481	100	- 0.1	White	American Indian (5.5%)

[1] Source: USCB (2000).
[2] Source: USCB (2008).

The proposed project would not be expected to have measurable impacts on demographic distributions. The proposed project would likely have substantial and widespread beneficial economic impacts by slightly easing unemployment and increasing income through short-term construction employment and long-term commercial development. Consequently, no mitigation measures are proposed for socio-economic resources in the area.

3.12 Environmental Justice

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for environmental justice in the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project areas.

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations* requires agencies to advance environmental justice (EJ) by pursuing fair treatment and meaningful involvement of minority and low-income populations. Fair treatment means such groups should not bear a disproportionately high share of negative environmental consequences from federal programs, policies, decisions, or operations. Meaningful involvement means federal officials actively promote opportunities for public participation and federal decisions can be materially affected by participating groups and individuals.

The EPA headed the interagency workgroup established by the 1994 Order and is responsible for related legal action. Working criteria for designation of targeted populations are provided in *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (EPA 1998). This guidance uses a statistical approach to consider various geographic areas and scales of analysis to define a particular population's status under the Order. Environmental justice is an evolving concept with potential for disagreement over the scope of analysis and the implications for federal responsiveness.

Within the overlapping counties the predominant race is White ranging from approximately 65% in Mountrail County to approximately 92% in McLean County (Table 3.12). Within the FBIR, the predominant race is American Indian (65%) followed by White (26%), and other or mixed races (5%) (Table 3.12).

Table 3.12: ***Study area race and ethnicity.***

Reservation, County, & State	Total Population	% White	% Black or African American	% American Indian or Alaska Native	% Hispanic	% Other
Fort Berthold Reservation	5,915	26.7	0.1	65.3	2.6	5.3
Dunn County	3,600	86.1	>0.1	12.3	0.8	0.8
McKenzie County	5,737	77.0	0.1	20.8	1.0	1.1
McLean County	9,311	92.3	>0.1	5.5	0.9	1.4
Mountrail County	6,631	65.7	0.1	29.2	1.3	3.7
North Dakota	642,200	91.7	0.6	4.8	1.2	1.7

Source: USCB (2000).

Tribal members on the Great Plains would qualify for special EJ consideration as both a minority and a low-income population. The population of North Dakota is predominantly White. Tribal members comprise almost 6% of North Dakota residents and about 14% of the population in Dunn County (Table 3.11b). Even in a state with relatively low per capita and household income, Indian individuals and households are distinctly disadvantaged. There are, however, some unusual EJ considerations when proposed federal actions are meant to benefit tribal members. Determination of fair treatment necessarily addresses the existence and distribution of both benefits and negative impacts, due to variation in the interests of various tribal groups and individuals. There is also potential for major differences in impacts to resident tribal members and those enrolled or living elsewhere.

A general benefit to tribal government and infrastructure has already resulted from tribal leasing, fees, and taxes. Oil and gas leasing has also already brought much-needed income to MHA Nation members who hold mineral interests, some of whom might eventually benefit further from royalties on commercial production. Profitable production rates at proposed locations might lead to exploration and development on additional tracts owned by currently non-benefitting allottees. The absence of lease and royalty income does not, moreover, necessarily preclude other benefits. Exploration and development would provide many relatively high-paying jobs, with oversight from the Tribal Employment Rights Office (TERO).

The owners of allotted surface within project areas may not hold mineral rights. In such cases, surface owners do not receive oil/gas lease or royalty income, and their only income would be compensatory for productive acreage lost to road and well pad construction. Tribal members without either surface or mineral rights within the project area would not receive any direct benefits whatsoever. Indirect benefits of employment and general tribal gains would be the only offset to any impacts.

Potential impacts to tribes and tribal members include disturbance of cultural resources, impacts to biological resources, and loss of rangeland forage. The potential impacts to cultural resources are significantly reduced following the onsite surveys of the well pads and access roads and determination by the Tribes that there would be no effect to historic properties or traditional and cultural properties (TCPs). There is potential for disproportionate impacts, especially if the impacted tribes and members do not reside within the reservation and therefore do not share in direct or indirect benefits. Nothing is known to be present, furthermore, that qualifies as a traditional or cultural property or for protection under the *American Indian Religious Freedom Act* (AIRFA). The potential for disproportionate impacts is further mitigated by requirements for immediate work stoppage following an unexpected discovery of cultural resources of any type. Mandatory consultation would take place during any such work stoppage, affording an opportunity for all affected parties to assert their interests and contribute to an appropriate resolution, regardless of their home location or tribal affiliation.

The proposed project has not been found to pose significant impacts to any other critical element – air, public health and safety, water, wetlands, wildlife, soils, or vegetation – within the human environment. Avoiding or minimizing such impacts also makes unlikely disproportionate impacts to low-income or minority populations. The Proposed Action offers many positive consequences for tribal members, while recognizing Environmental Justice concerns. Procedures summarized in this document and in the APDs are binding and sufficient. No laws, regulations or other requirements have been waived; no compensatory mitigation measures are required.

3.13 Mitigation and Monitoring

Many protective measures and procedures are described in this document and in the three APDs. These mitigation measures are summarized below. No laws, regulations, or other requirements have been waived; no compensatory mitigation measures are required.

- All construction activities would follow lease stipulations, practices, and procedures outlined in the APD and in the guidelines and standards in the book, *Surface Operating Standards for Oil and Gas Exploration and Development* (USDI-USDA 2007).
- North Dakota One Call would be contacted (call #811) so that all existing utilities would be located prior to earthmoving activities and avoided as much as practicable. In situations where they cannot be completely avoided, the owner of the utility would be consulted prior to construction.
- A semi-closed loop system would be used for drilling activities.
- Fresh water would be used to drill the well bore to a depth of 1,500 to 2,500 feet.
- Surface casing would be cemented in place to a depth of about 1,500 to 2,500 feet.
- Water produced from drilling would be captured into tanks and periodically hauled to an approved disposal site.
- Evidence of groundwater contamination related to the project would result in a stop work order until all appropriate measures were identified and implemented.
- Dust control measures would be employed, as necessary or as required by the BIA during construction and production, to suppress road dust.
- XTO would take the necessary steps to reduce and control air emissions and would obtain all necessary permits required by the State or Federal agencies.
- If initial site construction occurs within the February 1st-July 15th migratory bird nesting period then the project area may be surveyed within 5 days of construction start by a qualified biologist to determine if active nests are present. If nests are present then construction would be delayed until active nests are abandoned or USFWS shall be contacted regarding how to proceed.
- If the site is planned for construction during the nesting period, the well pad site and access road may be mowed prior to the nesting season to discourage nesting by migratory birds (e.g., Sprague's Pipit).
- Power and utility spur lines leading to the well pad would be installed below ground.
- Drip buckets and barrels placed under valves and spigots would be covered with wire mesh to prevent wildlife species from entering and becoming entrapped.
- The cuttings pit and catch-all pit would be covered with a nylon net with a 1.5 inch mesh size to prevent birds from entering them. The nets would remain in place until the pits are reclaimed.
- The cuttings pit and catch-all pit would be lined with an impervious synthetic liner to prevent potential leaks.

- If used, open pits that may contain oil would be cleaned up immediately to prevent wildlife mortality.
- Any sighting of a protected species within one-mile of the project area would be immediately reported to the USFWS, NDGFD, Tribe, and BIA.
- The well pad would be fenced to prevent access by livestock and wildlife.
- Pits would be fenced on all four sides to prevent personnel, livestock, and wildlife from accidentally falling into the pit if the entire site has not already been protected within a fence.
- If a Bald Eagle or Golden Eagle nest is observed within one-half mile of the project area, a no disturbance buffer of one-half mile radius would be placed around the nest, and the USFWS would be notified.
- Ground disturbance would be minimized to that which is necessary to implement the project.
- Ground disturbing activities and vehicular traffic would only occur within the approved right-of-way and well pad area boundary.
- To minimize habitat loss and fragmentation and reduce disturbance to potential Dakota skipper habitat, the proposed project would include multiple wells at a single well pad location, thereby reducing.
- The existing road network would be used as much as possible to further reduce habitat loss and fragmentation.
- All noxious weeds would be controlled prior to and after ground-disturbing activities, including treatment as needed to help prevent indirect impacts on potential skipper habitat.
- If used, appropriate herbicides would be applied during the proper time(s) of the year, during the proper weather conditions, and at the appropriate rate. A spot-treatment herbicide application is recommended.
- An approved weed-free seed mix would be used, such as the seed mix and cover crop identified in *Section 3.9.5* and Table C1 of Appendix C.
- Certified weed-free mulch (e.g., straw) would be used as needed in reclamation efforts.
- To maintain some habitat integrity, disturbed ground would be reclaimed using native plants from approved plant lists as identified by the Tribe and BIA. As required by the NDIC, costs would be covered by issuance of a bond.
- Topsoil would be salvaged and stored in at least two piles at each pad to facilitate interim reclamation. Topsoil piles would be seeded with native plant species to help keep it viable.
- Topsoil removal would be limited to areas necessary to implement the project. Topsoil that is removed would be stockpiled and used to reclaim disturbed ground in the project area. The time that topsoil is stockpiled would be minimized, as is practicable, in order to retain its viability.

- The time that barren areas are exposed would be minimized, as is practicable, in order to reduce soil erosion and decrease the possibility of weed colonization.

- BMPs would be applied to reduce soil erosion. Sediment controls (e.g., silt fence, straw booms/wattles) would be emplaced around swales, topsoil stockpiles, and staging areas, to prevent or reduce soil erosion, especially during precipitation events. Erosion control measures would be needed along deep cuts and fills to prevent deposition into swales and drainages.

- Erosion control matting would be completed on all cut and fill slopes and silt fences would be used down gradient from fill slopes, as necessary.

- Silt fences would be used down gradient from fill slopes, as needed.

- Where feasible, a drainage ditch would be installed on the up-gradient side of cuts to prevent surface runoff from entering the pad site.

- Soil stabilizers or soil binders could be applied, as needed.

- The tops of the fill slopes would be bermed (2 feet) to prevent runoff and a silt fence placed at the bottom of fill slopes to prevent offsite sedimentation.

- The corners of the well pad would be rounded to create a greater buffer to drainages.

- Monitoring of any identified cultural resource impacts by qualified personnel would be required at both well pads during all ground-disturbing activities.

- Project personnel would be prohibited from collecting any artifacts or disturbing cultural resources in the area under any circumstances.

3.14 Cumulative Impacts

Environmental impacts may accumulate slowly over time or hasten when in combination with similar activities in the area. Unrelated activities may also have negative impacts on critical elements, thereby contributing to cumulative degradation of the environment. Reasonably foreseeable future impacts must also be considered.

Earlier oil and gas exploration did not result in commercial production. Current land uses would be expected to continue with little change since virtually all available acreage is already organized into range units that facilitates using surface resources for economic benefit. Undivided interests in the land surface, range permits, and agricultural leases are often held by different tribal members than those holding the mineral rights; oil and gas development could have a small effect on current land use patterns.

Prairie habitat is increasingly being lost or fragmented in North Dakota. To prevent or limit habitat fragmentation XTO has proposed to install multiple wells (up to six) at each well pad location, accessed by one road. This reduces the number of well pad footprints and access roads required for each project. To reduce fragmentation further, disturbed ground would be reclaimed with native prairie plants. Existing roads are being used to the maximum extent practicable, and where possible new roads are being shared by oil companies with the intent that this would reduce habitat fragmentation across the landscape. The spacing unit (1,280 acres) of many of the oil leases also helps to minimize habitat fragmentation.

XTO has proposed that additional well pads might eventually be drilled from other sections within the Fort Berthold Reservation. Associated surface disturbance would be relatively minimal and other impacts

mostly temporary. Impacts to air quality by emissions from individual well pads have not been an issue in the 'far-field' as indicated, in part, by SO_2, NO_2, O_3, PM_x, CO, and Pb levels occurring within State and Federal standards (see *Section 3.2-Air Quality*). However, cumulative impacts to air quality in the 'near-field' of a Class II airshed has not been addressed by the EPA and remains unknown.

As of October 2010, 132 active wells occurred within 20 miles of the proposed Grinnell 41X-1 project area (Table 3.14a; Figure 3.14) (NDIC 2010). The closest well is confidential and is 2.9 miles to the west. Another four wells occur within a five mile radius of this proposed site (Table 3.14a).

Table 3.14a: ***Number of oil wells and their proximity to the proposed Grinnell 41X-1 project area.***[1]

Distance[2] (mile)	Number and Type of Oil Wells				
	Active	Confidential	Drilling	Permit Location to Drill	Total
0 to 1	0	0	0	0	0
1 to 5	1	4	0	0	5
5 to 10	16	24	0	1	41
10 to 20	132	104	14	6	256

[1] Source: NDIC 2010.

As of October 2010, 151 active wells occurred within 20 miles of the proposed Grinnell 34X-33 project area (Table 3.14b; Figure 3.14) (NDIC 2010). The closest well is confidential and is 3.07 miles to the west. An additional three wells occur within a five mile radius of this proposed site (Table 3.14b).

Table 3.14b: ***Number of oil wells and their proximity to the proposed Grinnell 34X-33 project area.***[1]

Distance[2] (mile)	Number and Type of Oil Wells				
	Active	Confidential	Drilling	Permit Location to Drill	Total
0 to 1	0	0	0	0	0
1 to 5	0	4	0	0	4
5 to 10	15	24	0	1	40
10 to 20	151	135	14	7	307

[1] Source: NDIC 2010.

As of October 2010, 130 active wells occurred within 20 miles of the proposed GeorgeBlackHawk 21X-6 project area (Table 3.14c; Figure 3.14) (NDIC 2010). The closest well is confidential and is 3.3 miles to the southeast. An additional two wells occur within a five mile radius of this proposed site (Table 3.14c).

Table 3.14c: ***Number of oil wells and their proximity to the proposed GeorgeBlackHawk 21X-6 project area.***[1]

Distance[2] (mile)	Number and Type of Oil Wells				
	Active	Confidential	Drilling	Permit Location to Drill	Total
0 to 1	0	0	0	0	0
1 to 5	0	3	0	0	3
5 to 10	14	24	0	1	39
10 to 20	130	102	14	6	252

[1] Source: NDIC 2010.

The proposed three projects would share in using an existing road, which would be improved to accommodate the project. This road would also be used by several other proposed oil/gas well exploration projects. Vehicular traffic would increase on the rural road system. Visual changes would be noticeable and accumulate over the landscape from physical development of the well pad and access road and from possible increased lighting of the pad.

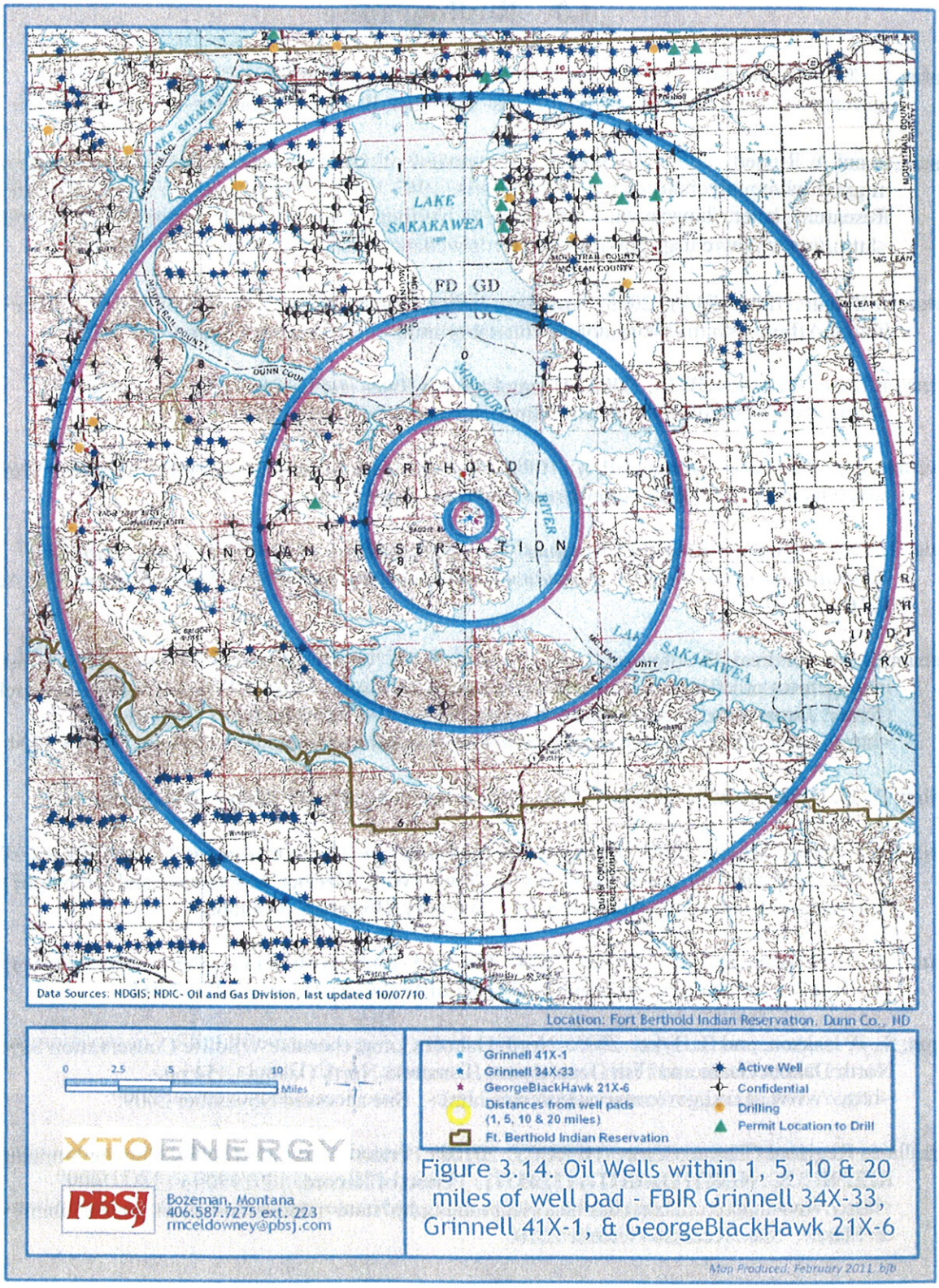
Commercial success at any new well might result in additional oil/gas exploration proposals. Approved oil/gas leases carry an implied right to conduct exploration and development activity, but additional cumulative impact analysis and BIA approvals are required before the surface is disturbed at any other location. Cumulative impacts that are reasonably foreseen from existing and proposed activities include negative impacts from habitat fragmentation and positive impacts from an improved economy for the reservation.

3.15 Irreversible and Irretrievable Commitment of Resources

Removal and consumption of oil or gas from the Bakken 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 losses during earthmoving or in collisions with vehicles, and energy expended during construction and operation. Belowground electric power lines and utilities would be installed from the main lines to the well pad within the disturbed ROW.

3.16 Short-Term Use of the Environment Versus Long-Term Productivity

Short-term activities would not detract significantly from long-term productivity of the project area. The small area dedicated to the access road and well pad would be unavailable for livestock grazing, wildlife habitat, and other uses. Allottees with surface rights would be compensated for loss of productive acreage and project footprints would shrink once wells were drilled and non-working areas were reclaimed and reseeded. Successful and ongoing reclamation of the landscape would soon support wildlife and livestock grazing and stabilize the soil to reduce erosion and sedimentation. The major long-term resource that would be lost corresponds with the project's purpose of extracting hydrocarbons from the Bakken.


LAKE SAKAKAWEA
FD GD
FORT BERTHOLD INDIAN RESERVATION
MISSOURI RIVER
DUNN COUNTY
MOUNTRAIL COUNTY
MCLEAN COUNTY
Data Sources: NDGIS; NDIC- Oil and Gas Division, last updated 10/07/10
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 2.5 5 10 Miles
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Grinnell 41X-1
Grinnell 34X-33
GeorgeBlackHawk 21X-6
Distances from well pads (1, 5, 10 & 20 miles)
Ft. Berthold Indian Reservation
Active Well
Confidential
Drilling
Permit Location to Drill
Figure 3.14. Oil Wells within 1, 5, 10 & 20 miles of well pad - FBIR Grinnell 34X-33, Grinnell 41X-1, & GeorgeBlackHawk 21X-6
Map Produced: February 2011 bjb

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5.0 List of Preparers

An interdisciplinary team contributed to this document, following guidance in Part 1502.6 of CEQ regulations. Post, Buckley, Schuh, and Jernigan prepared this EA under contract to XTO Energy, Inc. and in cooperation with the Bureau of Indian Affairs, Great Plains Regional Office, Division of Environment, Safety and Cultural Resources. Preparers, reviewers, consultants, and federal officials include the following:

- Chris Miller — Project Manager, PBS&J
  Sections 1 and 2; Document QA/QC
- Richard McEldowney — Senior Scientist, PBS&J
  Affected Environment; Water Resources; Cumulative Effects
- Andrea Pipp — Senior Scientist, PBS&J
  Air Quality; Public Health and Safety; Environmental Justice; Socio-Economics; and Document preparation.
- Lynn Bacon — Biologist, PBS&J
  Threatened and Endangered Species
- Mark Traxler — Wildlife Biologist, PBS&J
  General Wildlife and Fisheries
- Bridget Belliveau — GIS Specialist, PBS&J
  Maps; Figures
- Dennis Phillippi — Principal / Range Scientist, Natural Resource Options, Inc.
  Vegetation and Invasive Species; Document QA/QC
- Doug Harrison — Soil Scientist, Natural Resource Options, Inc.
  Soils
- Jennifer Harty — Cultural Resources Specialist, Kadrmas, Lee & Jackson
  Cultural Investigation
- Donny Worthington — XTO Energy, Inc.
  Document QA/QC
- Marilyn Bercier — BIA - Regional Environmental Scientist. Division of Environmental, Safety and Cultural Resources.
  Reviewer of draft EA and provides recommends to BIA Regional Director regarding FONSI or EIS.

6.0 Consultation and Coordination

6.0.1 Grinnell 41X-3 Scoping Letter and Comments

The Grinnell 41X-1 project scoping letter reproduced below was mailed on October 7, 2010 and posted at the BIA Fort Berthold Agency. Direct mail recipients include those listed in Table 6.0a. Ten comment letters were received within the 30-day scoping period.

October 7, 2010

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 six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Reservation by XTO Energy. The well pad and access road are proposed in the following location and shown on the enclosed project location map:

- **Grinnell 41X-1** Site: NE ¼ NE ¼ Section 1, Township 148N, Range 92W (well pad and access road)
  SE ¼ SW ¼ Section 33, Township 149N, Range 91 W (access road)

Development of the project would consist of the mechanical excavation and preparation of a single well pad that would serve up to six wells and the construction of one new access road. The well pad is roughly 5.5 acres in size. The proposed access road for the Grinnell 41X-1 site is roughly 220 feet long. The six wells would be located within a 1280-acre spacing unit and positioned to use the same access road. The drilling of these well sites is proposed to begin as early as late winter/early spring 2011.

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:

Chris Miller, Project Manager
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045
406-259-7979 (phone)
406-259-2033 (fax)
lcmiller@pbsj.com

If we do not hear from you by **November 8, 2010**, we will assume that you have no comment on this project. Questions can be directed to Chris Miller using the information provided, or Rich McEldowney at (406) 587-7275 (ext. 223).

Thank you for your attention and input.

Sincerely,

Chris Miller
Project Director

Table 6.0a: ***Responses by direct mail by recipients of the Grinnell 41X-1 scoping letter sent on October 7, 2010.***

ENTITY	CONTACT	RESPONSE*
MHA Nation		
Chairman	Marcus Wells Jr. (Tex G. Hall)	No comments received
Four Bears Representative	V. Judy Brugh	No comments received
Mandaree Representative	Nathan Hale (Arnold Strahs)	No comments received
New Town Representative	Malcom Wolf (Scott Eagle)	No comments received
Parshall/Lucky Mound Representative	Mervin Packineau	No comments received
Twin Buttes Representative	Barry Benson	No comments received
THPO	Perry Brady Director	Tribal Historic Preservation Office and the Tribal Historical Preservation Officer representing the Mandan Hidatsa Arikara Nation concur with the development of the project.
	Fred Fox	No comments received
Director of Game and Fish	Fred Poitra	No comments received
	Damon Williams (Tom Sage)	No comments received
	NAGPRA Office	No comments received
Natural Resource Dept.	Barry Benson	No comments received
Regional Native American Tribes		
Sisston-Wahpeton Sioux Tribe	Mike Selvage	No comments received
Spirit Lake Sioux Tribe	Myra Pearson	No comments received
Standing Rock Tribe	Charles W. Murphy	No comments received
Turtle Mountain Band of Chippewa	Richard Marcellais	No comments received
U.S. Department of Agriculture		
Natural Resource Conservation Service	Paul Sweeney State Conservationist	The proposed project is not supported by federal funding or action, therefore, the Farmland Protection Policy Act (FPPA) does not apply and no further action is needed. The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provides that if a USDA participant converts a wetland for the purpose of, or to have the effect of, making agricultural production possible, loss of USDA benefits could occur. Guidelines for the installation of permanent structures where wetlands occur are provided and if followed, participants would continue to receive USDA benefits. NRCS recommends that impacts to wetlands be avoided.
Little Missouri National Grassland-McKenzie		No comments received

Table 6.0a (continued): ***Responses by direct mail by recipients of the Grinnell 41X-1 scoping letter sent on October 7, 2010.***

ENTITY	CONTACT	RESPONSE*
U.S. Department of Defense		
Minot Air Force Base		No comments received
U.S. Army Corps of Engineers	Brad Thompson, Chief Omaha	The proposed project does not appear to be located within Corps owned or operated lands, therefore we are not providing floodplain or flood risk information. To determine if the proposed project site may impact FEMA special flood hazard areas, please consult Jeff Klein (701) 328-4898. Plans should be coordinated with EPA for groundwater protection. Proposed placement of fill materials into waters of the US or jurisdictional wetlands will require a COE permit(s). Contact John Shelman (406) 995-2708 if you have questions.
U.S. Army Corps of Engineers	Daniel E. Cimarosti Bismarck District	Section 10 of the Rivers and harbor Act regulates work in or affecting navigable waters including work over, through, or under Section 10 water. These waters include the Missouri River, Lake Sakakawea and Lake Oahe. Section 404 regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the U.S. For any proposed well where the well line and/or bottom hole is under or crosses under Lake Sakakawea, regardless of depth, a DA permit application (ENG 4345) s required. Fact sheets for Nationwide Permits 12 and 14 (Utility Line Activities and Linear Transportation, respectively) are provided. EPA has denied 401 Water Quality Certification for activities in perennial drainages and wetlands, with conditions on activities in ephemeral and intermittent drainages. EPA 401 Conditions for Nationwide Permits is also provided.

Table 6.0a (continued): ***Responses by direct mail by recipients of the Grinnell 41X-1 scoping letter sent on October 7, 2010.***

ENTITY	CONTACT	RESPONSE*
U.S. Army Corps of Engineers	Charles Sorensen Garrison Project Office Riverdale, ND	USACE requests the following conditions be considered in the construction of a well location: avoid potential for river and lake contamination by using a closed loop mud and drilling fluid system; establish a catch trench on the down slope side of the pad closest to the COE boundary; all fluids in trench will be pumped out and disposed of properly; all sewage collection systems are a closed system –no open or exposed tanks, catch basins; and all fill/soil material be certified free of noxious weeds. Carefully consider cumulative impacts in the NEPA process.
U.S. Department of Energy		
Western Area Power Administration		No comments received
U.S. Department of Homeland Security		
Federal Emergency Management Agency Region VIII	David A. Kyner NFIP Program Specialist	No comments received
U.S. Department of the Interior		
Bureau of Indian Affairs	Marilyn Bercier	No comments received
Bureau of Indian Affairs Fort Berthold Agency	Darryl Turcotte	No comments received
Bureau of Indian Affairs Fort Berthold Agency	Viola Medicinebear	No comments received
Bureau of Indian Affairs Fort Berthold Agency	Jeff Desjarlais	No comments received
Bureau of Land Management	Billings, MT Office	No comments received
Bureau of Land Management	Dickinson, ND Office	No comments received

Table 6.0a (continued): ***Responses by direct mail by recipients of the Grinnell 41X-1 scoping letter sent on October 7, 2010.***

ENTITY	CONTACT	RESPONSE*
Bureau of Reclamation	Kelly B. McPhillips Environmental Specialist Bismarck, ND	Proposed oil and gas wells could potentially affect rural water pipelines since well access roads, service utilities and other developments are not specifically identified. A map depicting water pipeline alignments in the vicinity of the proposed well site and surrounding area will aid in the identification of potential adverse effects in crossing federal facilities. A pipeline crossing specification sheet is enclosed if needed. Any work planned should be coordinated with Mr. Lester Crows Heart, Fort Berthold Rural Water Director, Three Affiliated Tribes, New Town.
U.S. Fish and Wildlife Service	Jeffrey Towner	No comments received
National Park Service	Midwest Regional Office	No comments received
U.S. Environmental Protection Agency		
Region 8 NEPA Program	Larry Svoboda	No comments received
Region 8 Water Quality Program	David Moon	No comments received
U.S. Department of Transportation		
Federal Aviation Administration	Patricia L. Dressler Bismarck, ND	No comments received
North Dakota State Government		
Department of Health	L. David Glatt Chief Environmental Health Section	No comments received
Department of Transportation	Ronald J. Henke Director Office of Project Development	Proposed project will have no adverse effect on the highways unless working in highway ROW's then appropriate permits and risk management documents need to be completed.
Game and Fish Department	Paul Schadewald Chief Conservation and Communication Division	Primary concern is the fragmentation and loss of wildlife habitat associated with well pads and access roads. Recommend avoiding, to the extent possible, native prairie, wooded draws, riparian corridors and wetlands. Suggest botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests prior to construction.
Indian Affairs Commission	Scott Davis	No comments received
Parks and Recreation Planning and Natural Resources Div.	Jesse Hanson Manager	No comments received

Table 6.0a (continued): ***Responses by direct mail by recipients of the Grinnell 41X-1 scoping letter sent on October 7, 2010.***

ENTITY	CONTACT	RESPONSE*
State Water Commission	Larry Knudtson Research Analyst	The proposed project is not located in an identified floodplain nor will it affect an identified floodplain. It is responsibility of the project sponsor to ensure state, federal and local agencies are contacted for permits, approvals and easements. All waste material must be properly disposed - not in floodways. No sole-source aquifers have been designated.
State Historical Society of North Dakota/SHPO	Merlan E. Paaverud, Jr. Director	Request that a copy of cultural resource site forms and reports be sent to this office to keep records current.
North Dakota State Land Department	Energy Development Impact Office	No comments received
North Dakota Industrial Commission	Oil & Gas Division	No comments received
County Government		
Dunn County, Treasurer	Reinhard Hauck	No comments received
Dunn County, Commissioner	Ray Kadrmas	No comments received
Dunn County, Commissioner Chair	Cliff Ferebee	No comments received
McKenzie County, Commissioner	Richard Cayko	No comments received
McKenzie County, Auditor	Frances Olson	No comments received
Municipal Government		
New Town Municipal Airport, Manager	Harley Johnson	No comments received
Parshall-Hankins Field Airport, Manager	John Kuehn	No comments received
Utility Companies		
McKenzie Electric Cooperative		No comments received
McLean Electric Cooperative, Inc.		No comments received
Mid-Continent Cable Company		No comments received
Montana-Dakota Utilities		No comments received
NoDak Electric Co-op, Inc.		No comments received
Northern Border Pipeline Company		No comments received
Reservation Telephone Cooperative		No comments received
Southwest Water Authority		No comments received
West Plains Electric Cooperative, Inc.		No comments received

6.0.2 Grinnel 34X-33 Scoping Letter and Comments

The Grinnell 34X-33 project scoping letter reproduced below was mailed on September 1, 2010 and posted at the BIA Fort Berthold Agency. Direct mail recipients include those listed in Table 6.0b. Twelve comment letters were received within the 30-day scoping period.

September 1, 2010

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 six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Indian Reservation by XTO Energy. The well pad and access road are proposed in the following location and shown on the enclosed project location map:

- **Grinnell 34X-33** Site: SW ¼, SE ¼, Section 33, Township 149N, Range 91W
  NE ¼, NW ¼, Section 6, Township 148N, Range 91W

Development of the project would consist of the mechanical excavation and preparation of a single well pad that serves up to six wells and the construction of one new access road. The well pad is roughly 5.5 acres in size. The proposed access road for the Grinnell 34X-33 site is roughly 1255 feet long. The six wells would be located within a 1280-acre spacing unit and positioned to use the same access road. The drilling of these well sites is proposed to begin as early as the fourth quarter of 2010.

To ensure that social, economic, and environmental effects are analyzed accurately, we are requesting 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 this 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:

Chris Miller, Project Manager
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045
406-259-7979 (phone)
406-259-2033 (fax)
lcmiller@pbsj.com

If we do not hear from you by **September 30, 2010** we will assume that you have no comment on this project. Questions can be directed to Chris Miller using the contact information above or to Rich McEldowney at (406) 587-7275 (extension 223).

Thank you for your attention and input.

Sincerely,

Chris Miller
Project Director

Table 6.0b: ***Responses by direct mail by recipients of the Grinnell 34X-33 scoping letter sent on September 1, 2010.***

ENTITY	CONTACT	RESPONSE*
MHA Nation		
Chairman	Marcus Wells Jr. (Tex G. Hall)	No comments received
Four Bears Representative	V. Judy Brugh	No comments received
Mandaree Representative	Nathan Hale (Arnold Strahs)	No comments received
New Town Representative	Malcom Wolf (Scott Eagle)	No comments received
Parshall/Lucky Mound Representative	Mervin Packineau	No comments received
Twin Buttes Representative	Barry Benson	No comments received
THPO	Perry Brady Director	Tribal Historic Preservation Office and the Tribal Historical Preservation Officer representing the Mandan Hidatsa Arikara Nation concur with the development of the project.
	Fred Fox	No comments received
Director of Game and Fish	Fred Poitra	No comments received
	Damon Williams (Tom Sage)	No comments received
	NAGPRA Office	No comments received
Natural Resource Dept.	Barry Benson	No comments received
Regional Native American Tribes		
Sisston-Wahpeton Sioux Tribe	Mike Selvage	No comments received
Spirit Lake Sioux Tribe	Myra Pearson	No comments received
Standing Rock Tribe	Charles W. Murphy	No comments received
Turtle Mountain Band of Chippewa	Richard Marcellais	No comments received
U.S. Department of Agriculture		
Natural Resource Conservation Service	Paul Sweeney State Conservationist	The proposed projects is not supported by federal funding or action, therefore, the Farmland Protection Policy Act (FPPA) does not apply and no further action is needed. The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose of, or to have the effect of, making agricultural production possible, loss of USDA benefits could occur. Guidelines for the installation of permanent structures where wetlands occur are provided and if followed, participants would continue to receive USDA benefits. NRCS recommends that impacts to wetlands be avoided.
Little Missouri National Grassland-McKenzie		No comments received

Table 6.0b (continued): ***Responses by direct mail by recipients of the Grinnell 34X-33 scoping letter sent on September 1, 2010.***

ENTITY	CONTACT	RESPONSE*
U.S. Department of Defense		
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	Brad Thompson, Chief Omaha	The proposed project does not appear within Corps owned or operated lands, therefore we are not providing floodplain or flood risk information. To determine if the proposed project is within a FEMA special flood hazard area please consult Jeff Klein (701-328-4898).
U.S. Army Corps of Engineers	Daniel E. Cimarosti Bismarck District	Section 10 of the Rivers and Harbors Act regulates work in or affecting navigable waters including work over, through, or under Section 10 water including Lake Sakakawea and Lake Oahe. For any proposed well where the well line and/or bottom hole is under or crosses under Lake Sakakawea, regardless of depth, we require a DA permit application (ENG form 4345). Fact sheets for Nationwide Permits 12 and 14 (Utility Line Activities and Linear Transportation Projects), EPA 401 conditions for nationwide permits, and pre-construction notification requirements are provided.
U.S. Army Corps of Engineers	Riverdale, ND Office	No comments received
U.S. Department of Energy		
Western Area Power Administration		No comments received
U.S. Department of Homeland Security		
Federal Emergency Management Agency Region VIII	David A. Kyner NFIP Program Specialist	FEMA's major concern is if the property is located within a mapped special flood hazard area. Recommend contacting Cliff Whitman (701-627-4805) for drilling guidelines related to regulations and policies of the National Flood Insurance Program.
U.S. Department of the Interior		
Bureau of Indian Affairs	Viola Medicinebear	No comments received
Bureau of Indian Affairs Fort Berthold Agency	Darryl Turcotte	No comments received
Bureau of Indian Affairs Fort Berthold Agency	Marietta Shortbull	No comments received
Bureau of Indian Affairs Fort Berthold Agency	Jeff Desjarlais	No comments received
Bureau of Land Management	Billings, MT Office	No comments received

Table 6.0b (continued): ***Responses by direct mail by recipients of the Grinnell 34X-33 scoping letter sent on September 1, 2010.***

ENTITY	CONTACT	RESPONSE*
Bureau of Land Management	Dickinson, ND Office	No comments received
Bureau of Reclamation	Ron Melhouse Bismarck, ND Office	Proposed oil and gas wells could potentially affect rural water pipelines. There are no water lines either existing or proposed for construction in the vicinity of the well pad but the location of the proposed access road was not described. A map depicting the proposed or existing water line alignments for the proposed access road is attached. Any work planned should be coordinated with Mr. Lester Crows Heart, Fort Berthold Rural Water Director, Three Affiliated Tribes, New Town.
U.S. Fish and Wildlife Service	Jeffrey Towner	No comments received
National Park Service	Midwest Regional Office	No comments received
U.S. Environmental Protection Agency		
Region 8 NEPA Program	Larry Svoboda	No comments received
Region 8 Water Quality Program	David Moon	No comments received
U.S. Department of Transportation		
Federal Aviation Administration	Patricia L. Dressler Environmental Protection Specialist Bismarck, ND	No objection provided the FAA is notified of construction or alternations as required by Federal Aviation Regulations, Part 77, Objects Affecting Navigable Airspace.
North Dakota State Government		
Department of Health	L. David Glatt Chief Environmental Health Section	Impacts from proposed construction are considered minor. Efforts should be make to control fugitive dust. Utilize air pollution control practices to minimize emissions. 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. Oil and gas related construction activities that disturb five or more acres may need a permit to discharge storm water runoff from EPA. Guidelines to minimize erosion and control sediment to protect surface water quality are provided.

Table 6.0b (continued): ***Responses by direct mail by recipients of the Grinnell 34X-33 scoping letter sent on September 1, 2010.***

ENTITY	CONTACT	RESPONSE*
Department of Transportation	Ronald J. Henke Director Office of Project Development	Proposed project will have no adverse effect on the highways unless working in highway ROW's then appropriate permits and risk management documents need to be completed.
Game and Fish Department	Paul Schadewald Chief Conservation and Communication Division	Primary concern is the fragmentation and loss of wildlife habitat associated with well pads and access roads. Recommend avoiding, to the extent possible, native prairie, wooded draws, riparian corridors and wetlands. Suggest botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests prior to construction.
Indian Affairs Commission	Scott Davis	No comments received
Parks and Recreation Planning and Natural Resources Division	Jesse Hanson Manager	The project does not affect state park lands or Land and Water Conservation Fund recreation projects under our management. The ND Natural Heritage database show occurrence of piping plover in a section adjacent to the project area indicating habitat in the project area may be suited for this specie or other rare, threatened, sensitive or endangered species. Defer further comments on animal species to ND Game and Fish. Recommend using native species for revegetation during reclamation.
State Water Commission	Larry Knudtson	No comments received
State Historical Society of North Dakota/SHPO	Merlan E. Paaverud, Jr. Director	Request that a copy of cultural resource site forms and reports be sent to this office to keep records current.
North Dakota State Land Department	Energy Development Impact Office	No comments received
North Dakota Industrial Commission	Oil & Gas Division	No comments received
County Government		
Dunn County, Treasurer	Reinhard Hauck	No comments received
Dunn County, Commissioner	Ray Kadrmas	No comments received
Dunn County, Commissioner Chair	Cliff Ferebee	No comments received
McKenzie County, Commissioner	Richard Cayko	No comments received
McKenzie County, Auditor	Frances Olson	No comments received

Table 6.0b (continued): ***Responses by direct mail by recipients of the Grinnell 34X-33 scoping letter sent on September 1, 2010.***

ENTITY	CONTACT	RESPONSE*
Municipal Government		
New Town Municipal Airport, Manager	Harley Johnson	No comments received
Parshall-Hankins Field Airport, Manager	John Kuehn	No comments received
Utility Companies		
McKenzie Electric Cooperative		No comments received
McLean Electric Cooperative, Inc.		No comments received
Mid-Continent Cable Company		No comments received
Montana-Dakota Utilities		No comments received
NoDak Electric Co-op, Inc.		No comments received
Northern Border Pipeline Company		No comments received
Reservation Telephone Cooperative		No comments received
Southwest Water Authority		No comments received
West Plains Electric Cooperative, Inc.		No comments received

6.0.3 GeorgeBlackHawk 21X-6 Scoping Letter and Comments

The GeorgeBlackHawk 21X-6 project scoping letter reproduced below was mailed on October 13, 2010 and posted at the BIA Fort Berthold Agency. Direct mail recipients include those listed in Table 6.0c. Twelve comment letters were received within the 30-day scoping period.

October 13, 2010

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 six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Reservation by XTO Energy. The well pad and access road are proposed in the following location and shown on the enclosed project location map:

- **George Black Hawk 31X-6** Site: NE¼ NW¼ Section 6, Township 148N, Range 91W (well pad and access road)

Development of the project would consist of the mechanical excavation and preparation of a single well pad that would serve up to six wells and the construction of one new access road. The well pad is roughly 5.5 acres in size. The proposed access road for the George Black Hawk 31X-6 site is roughly 440 feet long. The six wells would be located within a 1280-acre spacing unit and positioned to use the same access road and well pad. The drilling of these well sites is proposed to begin as early as summer 2011.

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:

Chris Miller, Project Manager
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045
406-259-7979 (phone)
406-259-2033 (fax)
lcmiller@pbsj.com

If we do not hear from you by **November 15, 2010**, we will assume that you have no comment on this project. Questions can be directed to Chris Miller using the information provided, or Rich McEldowney at (406) 587-7275 (ext. 223).

Thank you for your attention and input.

Sincerely,

Chris Miller
Project Director

Table 6.0c: ***Responses by direct mail by recipients of the GeorgeBlackHawk 21X-6 scoping letter sent on October13, 2010.***

ENTITY	CONTACT	RESPONSE*
MHA Nation		
Chairman	Marcus Wells Jr. (Tex G. Hall)	No comments received
Four Bears Representative	V. Judy Brugh	No comments received
Mandaree Representative	Nathan Hale (Arnold Strahs)	No comments received
New Town Representative	Malcom Wolf (Scott Eagle)	No comments received
Parshall/Lucky Mound Representative	Mervin Packineau	No comments received
Twin Buttes Representative	Barry Benson	No comments received
THPO	Perry Brady Director	Tribal Historic Preservation Office and the Tribal Historical Preservation Officer representing the Mandan Hidatsa Arikara Nation concur with the development of the project.
	Fred Fox	No comments received
Director of Game and Fish	Fred Poitra	No comments received
	Damon Williams (Tom Sage)	No comments received
	NAGPRA Office	No comments received
Natural Resource Dept.	Barry Benson	No comments received
Regional Native American Tribes		
Sisston-Wahpeton Sioux Tribe	Mike Selvage	No comments received
Spirit Lake Sioux Tribe	Myra Pearson	No comments received
Standing Rock Tribe	Charles W. Murphy	No comments received
Turtle Mountain Band of Chippewa	Richard Marcellais	No comments received
U.S. Department of Agriculture		
Natural Resource Conservation Service	Paul Sweeney State Conservationist	The proposed project is not supported by federal funding or action, therefore, the Farmland Protection Policy Act (FPPA) does not apply and no further action is needed. The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provides that if a USDA participant converts a wetland for the purpose of, or to have the effect of, making agricultural production possible, loss of USDA benefits could occur. Guidelines for the installation of permanent structures where wetlands occur are provided and if followed, participants would continue to receive USDA benefits. NRCS recommends that impacts to wetlands be avoided.
Little Missouri National Grassland-McKenzie		No comments received

Table 6.0c (continued): ***Responses by direct mail by recipients of the GeorgeBlackHawk 21X-6 scoping letter sent on October13, 2010.***

ENTITY	CONTACT	RESPONSE*
U.S. Department of Defense		
Minot Air Force Base		No comments received
U.S. Army Corps of Engineers	Brad Thompson, Chief Omaha	Proposed project does not appear within Corps owned or operated lands therefore we are providing no floodplain or flood risk information. Contact Jeff Klein (701) 328- 4898 to determine if proposed project may impact FEMA special flood hazard area. Proposed plans should be coordinated with EPA for protection of groundwater resources. Any proposed fill into waters of US or jurisdictional wetlands will require permit(s). Please contact John Shelman (402) 995-2708 if you have questions.
U.S. Army Corps of Engineers	Daniel E. Cimarosti Bismarck District	Section 10 of the Rivers and harbor Act regulates work in or affecting navigable waters including work over, through, or under Section 10 water. These waters include the Missouri River, Lake Sakakawea and Lake Oahe. Section 404 regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the U.S. For any proposed well where the well line and/or bottom hole is under or crosses under Lake Sakakawea, regardless of depth, a DA permit application (ENG 4345) s required. Fact sheets for Nationwide Permits 12 and 14 (Utility Line Activities and Linear Transportation, respectively) are provided. EPA has denied 401 Water Quality Certification for activities in perennial drainages and wetlands, with conditions on activities in ephemeral and intermittent drainages. EPA 401 Conditions for Nationwide Permits is also provided.

Table 6.0c (continued): ***Responses by direct mail by recipients of the GeorgeBlackHawk 21X-6 scoping letter sent on October13, 2010.***

ENTITY	CONTACT	RESPONSE*
U.S. Army Corps of Engineers	Charles Sorensen Garrison Project Office Riverdale, ND	USACE requests the following conditions be considered in the construction of a well location: avoid potential for river and lake contamination by using a closed loop mud and drilling fluid system; establish a catch trench on the down slope side of the pad closest to the COE boundary; all fluids in trench will be pumped out and disposed of properly; all sewage collection systems are a closed system –no open or exposed tanks, catch basins; and all fill/soil material be certified free of noxious weeds. Carefully consider cumulative impacts in the NEPA process.
U.S. Department of Energy		
Western Area Power Administration		No comments received
U.S. Department of Homeland Security		
Federal Emergency Management Agency Region VIII	David A. Kyner NFIP Program Specialist	No comments received
U.S. Department of the Interior		
Bureau of Indian Affairs	Marilyn Bercier	No comments received
Bureau of Indian Affairs Fort Berthold Agency	Darryl Turcotte	No comments received
Bureau of Indian Affairs Fort Berthold Agency	Viola Medicinebear	No comments received
Bureau of Indian Affairs Fort Berthold Agency	Jeff Desjarlais	No comments received
Bureau of Land Management	Billings, MT Office	No comments received
Bureau of Land Management	Dickinson, ND Office	No comments received
Bureau of Reclamation	Kelly B. McPhillips Environmental Specialist Bismarck, ND	Proposed oil and gas wells could potentially affect rural water pipelines since well access roads, service utilities and other developments are not specifically identified. A map depicting water pipeline alignments in the vicinity of the proposed well site and surrounding area will aid in the identification of potential adverse effects in crossing federal facilities. A pipeline crossing specification sheet is enclosed if needed. Any work planned should be coordinated with Mr. Lester Crows Heart, Fort Berthold Rural Water Director, Three Affiliated Tribes, New Town.

Table 6.0c (continued): ***Responses by direct mail by recipients of the GeorgeBlackHawk 21X-6 scoping letter sent on October13, 2010.***

ENTITY	CONTACT	RESPONSE*
U.S. Fish and Wildlife Service	Jeffrey Towner	No comments received
National Park Service	Midwest Regional Office	No comments received
U.S. Environmental Protection Agency		
Region 8 NEPA Program	Larry Svoboda	No comments received
Region 8 Water Quality Program	David Moon	No comments received
U.S. Department of Transportation		
Federal Aviation Administration	Patricia L. Dressler Bismarck, ND	No comments received
North Dakota State Government		
Department of Health	L. David Glatt Chief Environmental Health Section	Impacts from proposed construction are considered minor. Efforts should be make to control fugitive dust. Utilize air pollution control practices to minimize emissions. 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. Oil and gas related construction activities that disturb five or more acres may need a permit to discharge storm water runoff from EPA. Guidelines to minimize erosion and control sediment to protect surface water quality are provided.
Department of Transportation	Ronald J. Henke Director Office of Project Development	Proposed project will have no adverse effect on the highways unless working in highway ROW's then appropriate permits and risk management documents need to be completed.
Game and Fish Department	Paul Schadewald Chief Conservation & Communication Division	Primary concern is the fragmentation and loss of wildlife habitat associated with well pads and access roads. Recommend avoiding, to the extent possible, native prairie, wooded draws, riparian corridors and wetlands. Suggest botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests prior to construction.
Indian Affairs Commission	Scott Davis	No comments received

Table 6.0c (continued): ***Responses by direct mail by recipients of the GeorgeBlackHawk 21X-6 scoping letter sent on October13, 2010.***

ENTITY	CONTACT	RESPONSE*
Parks and Recreation Planning and Natural Resources Division	Jesse Hanson Manager	The project does not affect state park lands or Land and Water Conservation Fund recreation projects under our management. The ND Natural Heritage database show occurrence of piping plover in a section adjacent to the project area indicating habitat in the project area may be suited for this specie or other rare, threatened, sensitive or endangered species. Defer further comments on animal species to ND Game and Fish. Recommend using native species for revegetation during reclamation.
State Water Commission	Larry Knudtson	The proposed project is not located in an identified floodplain nor will it affect an identified floodplain. It is responsibility of the project sponsor to ensure state, federal and local agencies are contacted for permits, approvals and easements. All waste material must be properly disposed - not in floodways. No sole-source aquifers have been designated.
State Historical Society of North Dakota/SHPO	Merlan E. Paaverud, Jr. Director	Request that a copy of cultural resource site forms and reports be sent to this office to keep records current.
North Dakota State Land Department	Energy Development Impact Office	No comments received
North Dakota Industrial Commission	Oil & Gas Division	No comments received
County Government		
Dunn County, Treasurer	Reinhard Hauck	No comments received
Dunn County, Commissioner	Ray Kadrmas	No comments received
Dunn County, Commissioner Chair	Cliff Ferebee	No comments received
McKenzie County, Commissioner	Richard Cayko	No comments received
McKenzie County, Auditor	Frances Olson	No comments received
Municipal Government		
New Town Municipal Airport, Manager	Harley Johnson	No comments received
Parshall-Hankins Field Airport, Manager	John Kuehn	No comments received

Table 6.0c (continued): ***Responses by direct mail by recipients of the GeorgeBlackHawk 21X-6 scoping letter sent on October13, 2010.***

ENTITY	CONTACT	RESPONSE*
Utility Companies		
McKenzie Electric Cooperative		No comments received
McLean Electric Cooperative, Inc.		No comments received
Mid-Continent Cable Company		No comments received
Montana-Dakota Utilities		No comments received
NoDak Electric Co-op, Inc.		No comments received
Northern Border Pipeline Company		No comments received
Reservation Telephone Cooperative		No comments received
Southwest Water Authority		No comments received
West Plains Electric Cooperative, Inc.		No comments received

*See Appendix F for full comments from the agencies/organizations.

Appendix A

Applications for Permit to Drill:

FBIR Grinnell 41X-1
FBIR Grinnell 34X-33
FBIR Grinnell 21X-6

Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 Environmental Assessment

XTO Energy, Inc.

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
7420A49475

6. If Indian, Allotee or Tribe Name
Three Affiliated Tribes

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
FBIR Grinnell 41X-1

2. Name of Operator XTO Energy, Inc.

9. API Well No.
33-025-01303

3a. Address 7114 W. Jefferson Ave., Suite 305
Denver, CO 80235

3b. Phone No. *(include area code)*
303.969.8280

10. Field and Pool, or Exploratory
Heart Butte - Bakken

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 279' FNL & 480' FEL, NENE (Lot 1) Sec. 1-148N-92W
At proposed prod. zone 588' FNL & 778' FEL, NENE (Lot 1) Sec. 1-148N-92W

11. Sec., T. R. M. or Blk. and Survey or Area
1-148N-92W

14. Distance in miles and direction from nearest town or post office*

12. County or Parish
Dunn

13. State
ND

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any)
279'

16. No. of acres in lease
1280 Ac. Spacing Unit

17. Spacing Unit dedicated to this well
All of Sec. 1 & 2-148N-92W

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft
n/a

19. Proposed Depth
20,283' MD
10,030' TVD

20. BLM/BIA Bond No. on file
UTB000138

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
1979' GL; 2002' KB

22. Approximate date work will start*
07/01/2011

23. Estimated duration
45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature

Name *(Printed Typed)*
J. Michael Warren

Date
02/07/2011

Title
Regulatory Coordinator

Approved by *(Signature)*

Name *(Printed Typed)*

Date

Title

Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

XTO ENERGY

PO Box 1569, Sidney, MT 59270

Drilling Plan - Drill, Complete & Equip Single Lateral Wellbore in the Bakken

Well Name and Location

FBIR Grinnell 41X-1

Location: NE NE Sec 1, 148N, 92W
Footage: 279 ft FNL, 480 ft FEL
Elev: Graded Pad 1979', KB 2002'
Dunn County, ND

Latitude	47.673356	North
Longitude	102.334761	West

Driving Directions

From Mandaree, ND: 15.3 mi E on BIA 12, 2.3 mi NE on BIA 13, 0.4 mi E on existing rd, 1.6 mi SE on proposed access rd to FBIR Headless Turtle 44X-32, 0.5 mi SE into loc'n

Drilling Rig Description

Rig	Nabors 109
Draw Works	Commander 650 A/C - 1,150 hp motor
Mast	DSI 136' Cantilever mast (550,000# - 12 lines)
Prime Movers	3 - Caterpillar 3512C - Kato 1100 KW gens
Pumps	2 - GD PZ-10 (independently driven)
BOPE	T3 6012 Type U 13-5/8" 5,000 psi single & dbl gate BOPs Hydril GX 13-5/8" 5,000 psi Annular BOP 4" x 5M-psi choke manifold

Formation Tops	TVD	
		Offset XTO Wells - none within a 5 mile radius
Base of Fox Hills	1,692	
Greenhorn	3,978	
Dakota Silt	4,698	Brackish Water
Dunham Salt (60')	**5,868**	
Spearfish	6,178	
Pine Salt (10 - 60')	**6,352**	
Minnekahta	6,488	
Opeche Salts (20 - 30')	**6,521**	
Minnelusa	6,797	soft/hard formation
Tyler	7,283	laminations can wipe
Kibbey Lime	7,728	out bit if drilled too aggressively
Charles	**7,887**	
Base Last Salt	**8,384**	
Mission Canyon	8,562	Possible losses
Lodgepole	9,163	
Upper Bakken Shale	10,000	
Middle Bakken	10,018	
Target - Bakken	**10,030**	

Logging, DST and Coring Program

1. A mud log will be run from Base of Last Salt to TD & on all laterals: Mudlog to include: total gas chromatograph and sample cuttings - 10' sample intervals in vertical hole & 30' intervals in laterals. A CBL/GR log will be run from deepest free-fall depth in 7 inch casing to surface. An MWD GR/ROP log will also be run from KOP (where the CBL will tie into) to TD of lateral.
2. *Open hole logs are not anticipated for this well (if drilled after FBIR Grinnell 34X-33)*
3. No DST's are planned at this time.

H2S

A minor H2S show may be present from below Base Last Salt to KOP. If noticed, RU H2S safety trailer etc.

Maximum Formation Pressure and Temp

1. Normal formation pressure gradient is expected (up to 0.5 psi/ft or 9.6 ppg) from surface to the Bakken Shale. The Bakken Shale, Bakken Middle Member, and Three Forks may be over pressured up as much as 0.66 psi/ft (12.8 ppg).
2. The maximum anticipated BHT is **250** degrees F. or less.

BOP Equipment Requirements

See attached diagram detailing BOPE specifications.

1. Rig will be equipped with upper and lower kelly cocks with handles available.
2. Inside BOP and TIW valves will be available to use on all sizes and threads of DP used on well.
3. BOP accumulator will have enough capacity to close HCR valve, close all rams plus annular preventer & retain minimum of 200 psi above precharge on the closing manifold without the use of closing pumps. The fluid reservoir capacity shall be at least double the usable fluid volume of the accumulator system capacity & the fluid level shall be mainatained at manufacturer's recommendation. There will be 2 additional sources of power for the closing pumps (electric and air). Sufficient N2 bottles will be available and will be recharged when pressure falls below manufacturer's minimum

4. BOP ram preventers will be tested to 5,000 psi using a test plug when initially installed and after 7 inch casing is nippled up and at 30 day intervals. Test BOP & casing strings to 1,500 psi just prior to drilling out 9-5/8" and 7" casing shoes. Function test rams and hydraulically operated remote choke line valve daily (preferably at every crew change).
5. Remote valve for BOP rams, HCR & choke shall be placed in a location that is readily available to Driller. The remote BOP valve shall be capable of closing and opening the rams.
6. Hand wheels on BOP shall be equipped with locking devices. A locking device shall be placed on annular preventer line valve & must be locked in the open position. This lock shall only be removed when the closing unit is inoperative.

Drilling Fluid and Related Equipment

1. Pumps shall be equipped with stroke counters with displays located in dog house. Slow pump speed shall be recorded on drilling report daily after mudding up.
2. A Pit Volume Totalizer will be installed and the readout will be displayed in the dog house.
3. Gas detecting equipment (for a chromatagraph) will be installed at shaker. Readouts will be available in dog house and in geologist trailer.
4. In the event gas flow becomes an issue. A flare pit shall be constructed not less than 100' from wellhead & 50' from cuttings handling area. Lines to the flare pit will be straight runs (staked down) and turns will utilize targeted tees. Flare pit will be located down wind as much as possible. An electronic ignitor will be used along with a propane line to provide for a continuous flare pilot.

Drilling Plan

Section 1 - Surface Casing>> **Surface to: 1,820** ***(Surface Casing Depth + 20')***

Conductor:	16" set at 45' - 80' (depending on gravel or coal depths)
Hole Size:	13-1/2"
Mud:	Fresh Water
Bits:	Type 1 mill tooth
Procedure:	Set 16" conductor pipe into firm clay (45'-80'). Drill to casing setting depth (plus necessary rathole). *After reaching TD, run gyro directional survey (inclination and azimuth at 100' stations).* Run casing and cement. Weld on C22 5M psi casing head. NU 11" x 5M psi drilling spool. NU 5M psi BOPE. Test to 5,000 psi.
Casing:	9-5/8" 36# K-55 8rd ST&C R3 SMLS - New. **Set at: 1,800 ft**
Centralizers:	2 turbolizers per jt on 1st **2** jts (stop banded 10' from each collar) & 1 regular centralizer per **6** jts to surface.
Cement:	Lead Slurry: **330 Sacks** 50:50 Poz:Class C w/ defoamer, water loss & 1/8 #/sk polyflake. Mixed at 17.63 gps wtr, 2.93 cf/sk yield & 11.5 ppg Tail Slurry: **200 Sacks** Class C with 3% salt & 1/8 #/sk polyflake. Mixed at 7.37 gps wtr, 1.48 cf/sk yield and 14.2 ppg ***Note: Volumes calculated assuming 35% excess over 13-1/2" hole size.***

Section 2 - Surf Csg Shoe to KOP>> **1,800 to: 9,621**

Hole Size:	8-3/4"
Mud	Invert - 80% Diesel / 20% Salt Water. Mud Weight 9.5 - 9.7 PPG. ES 500-600.
Bits	PDC bits with mud motors and MWD. Avoid RPM's at bit > 230 in fast hole section. ***Jet bits with 12's or 13's max.*** *Recommend drilling out with Smith MDSi616BPX jetted with 12's and drilling to top of Charles (or when ROP becomes unbearable).* *Then recommend Hughes Q506FX (Part No. X14533R or X13904) as the 2nd bit, jetted with 13's.*
Procedure:	Drill w / PDC bit & mud motor. Steer as needed with MWD or SWD. Survey every 90'. Hold deviation to 2 deg max from surf csg shoe to ~6,000'; then ~3 deg max to ~8,000'; then ~4 deg max to KOP. Condition hole for logs (if needed). TOH
Logs:	Mudlogger will start at Base of Last Salt.
if 1st well drilled on pad	GR, Resistivity, BHC Sonic — From TD To Surf Csg Density - Neutron Porosity — From TD To 50' above Tyler

Section 3 - Drill Curve (14 Degree/100')>> **9,621 to: 10,304 7" Casing Point**

Hole Size:	8-3/4"
Mud:	Invert - 80% Diesel / 20% Salt Water. Mud weight 9.5 - 9.7 PPG. ES 500-600.
Bits:	*Type 2 PDC (Halliburton FXD55M or Reed MSF613DC2A) jetted with 18's. Preferred motor is a Wenzel 2.38 deg, fixed bend, 5/6 lobe, 5 stage, 0.35 rev/gal motor equipped with short (+/- 5') bit-to-bend*
Procedure:	Drill Curve per directional plan (maximum survey interval is 30').
Casing:	Set 7" 29# P-110 & MS-110 LT&C and 32# P-110 (100' above & below salts) at **10,284 ft** Anticipated Casing Design to facilitate fracture stimulating down casing

Top	Btm	Ftg		
0	5,768	5,768	7" 29# P-110 LT&C	Surf to 100' above Dunham salt
5,768	6,897	1,129	7" 32# P-110 LT&C	100' above Dunham to 100' below base of Pine/Opeche salts
6,897	7,787	890	7" 29# P-110 LT&C	100' below base of Pine/Opeche to 100' above Charles salt
7,787	8,484	697	7" 32# P-110 LT&C	100' above Charles salt to 100' below Base of Last Salt
8,484	9,721	1,237	7" 29# MS-110 LT&C	100' below Base of Last Salt 100' below KOP
9,721	10,284	563	7" 29# P-110 LT&C	100' below KOP to TD

Centralizers:	2 stand-off bands per jt on btm **3** jts (banded 10' from collars). 1 stand-off band on every other jt from curve landing depth through KOP. 1 turbolizer centralizer per jt from 100' above to 100' below each salt section. Then, 1 regular centralizer per **6** jts up to anticipated cement top.
Cement:	**Lead Slurry: 156 Sacks** *(est. TOC ~ 200' above Mowry)* High-early strength 50:50 Pozmix with defoamer, fluid loss additive, dispersant, 0.2% thixotropic additive & 1/8 #/sk polyflakes. Mixed at 14.45 gps, 2.51 cf/sk, 11.8 ppg

1st Tail Slurry: [illegible] Sacks [illegible]

[illegible]

2nd Tail Slurry: 101 Sacks [illegible]

[illegible]

NOTE: Slurry volumes are based on 9" hole + 50% excess (= 8.75" hole + 75% excess)

Logs: MWD GR/ROP. Mud log.

Section 4 - Lateral #1>> 10,284 to: 20,283 *TD (MD)*

Hole Size: 6"

Mud: Salt Water Mud. Typically 9.5-9.7 ppg using NaCL. If conditions warrant use CaCl brine (up to 11.2 ppg).

Bits: PDC bits.

Procedure: TIH w/bit and directional tools. Drill open hole lateral per directional plan to TD target. Max survey interval in lateral is 90'
TOH with DP & BHA. Run 4 1/2" 11.6# J-55 BT liner *w/* pre-drilled, 0.5" holes per 2 ft below bottom-most external swell pkr, followed by 13.5# P-110 BT blank pipe with external swell packers (evenly spaced in open hole, unless natural fractures were encountered while drilling) from +/-TD to last swell packer in open hole. Run 4.5" 13.5# P-110 Tenaris-Blue casing above last swell packer in the open hole to +/- KOP, with a *final* swell packer located immediately below the liner hanger.
Once liner is run, circulate out oil & gas and spot FW in lateral to activate *swell* pkrs. Drop ball & wait +/- 1 hr for it to seat. Set liner hanger & top pkr - test to +/- 5,000 psi. PU & slack-off +/- 40 k-lbs over/under string weight to confirm liner hanger is set. Rotate off of liner hanger. Circulate bottoms-up. POH LD liner setting tools.

Liner:

Top:	Btm:
9,621 - *KOP*	20,283 *<-- spaced out as close to TD as possible*

Finalize Well >>>> Set wireline-set, tubing-retreivable bridge plug with BHP gauges & top blanking plug in 1st or 2nd joint of 4-1/2" liner below liner top. Run CBL. Displace vertical section of wellbore above plug with clean brine (the lower the MW, the better). LD DP. ND BOP & NU tree. RDMO.

Prepared By: [illegible] 8/19/2011

Updated: [illegible]

XTO ENERGY

Well Construction Diagram

FBIR Grinnell 41X-1
Location: NE NE Sec 1, 148N, 92W
Footage: 279 ft FNL, 480 ft FEL
Elev: Graded Pad 1979', KB 2002'
Dunn County, ND

From Mandaree, ND: 15.3 mi E on BIA 12, 2.3 mi NE on BIA 13, 0.4 mi E on existing rd, 1.6 mi SE on proposed access rd to FBIR Headless Turtle 44X-32, 0.5 mi SE into loc'n

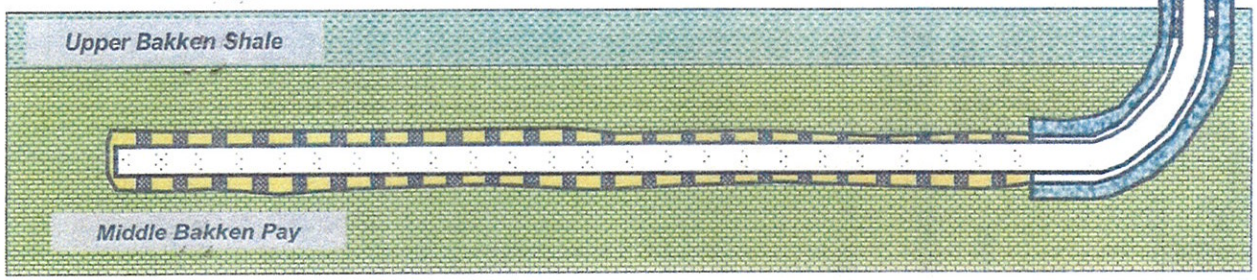
16" Conductor set at 60' - 80'. Drill out w/ 13.5" bit.
Set 9-5/8" 36# K-55 surface casing at 1,800 ft
Lead Cement: 330 Sacks - 50:50 Poz:Class C with defoamer, dispersant & polyflakes
Mixed at 17.83 gps wtr, 2.93 cf/sk yield and 11.5 ppg.
Tail Cement : 200 Sacks Class C with salt & polyflakes
Mixed at 4.97 gps wtr, 1.15 cf/sk yield and 15.8 ppg.

8 3/4" hole size. Drilled with invert mud (80% diesel & 20% SW)
7" Casing set at: 10,284 ft MD
Lead Cement (top at 4,100 ft & 50% Excess): 156 Sacks - high-early strength 50:50 Poz with defoamer, water control, thixotropic additive & polyflakes. Mixed at 14.45 gps, 2.51 cf/sk, 11.8 ppg
Tail Cement (top at 5,600 ft & 50% Excess): 847 Sacks (1st Tail = 50:50 Poz w/ additives mixed at 1.39 cf/sk, 14.2 ppg + 2nd Tail = Class G with 35% silica flour & additives mixed at 1.57 cf/sk, 15.6 ppg.
Assumes 9" hole dia.

Lateral #1: Est TD 20,283 ft FT of Pay: 10,000
Liner: 4 1/2" 11.6# J-55 BT from toe to 1st swell pkr, then 13.5# P-110 BT to last pkr in open hole, & 13.5# P-110 T-Blue to liner top. 9,621 to 20,283 ft.
Toe Section perfs pre-drilled w/ one 0.5" hole per 2 ft. Additional perfs added during completion
24 Tam Freecap-1 water swelling packers 5.5" OD - spaced evenly in open hole with last swell packer placed immediately below liner hanger

KOP 9,621 ft
14 deg/100

Liner Top Packer and PBR @ KOP
9,621 ft

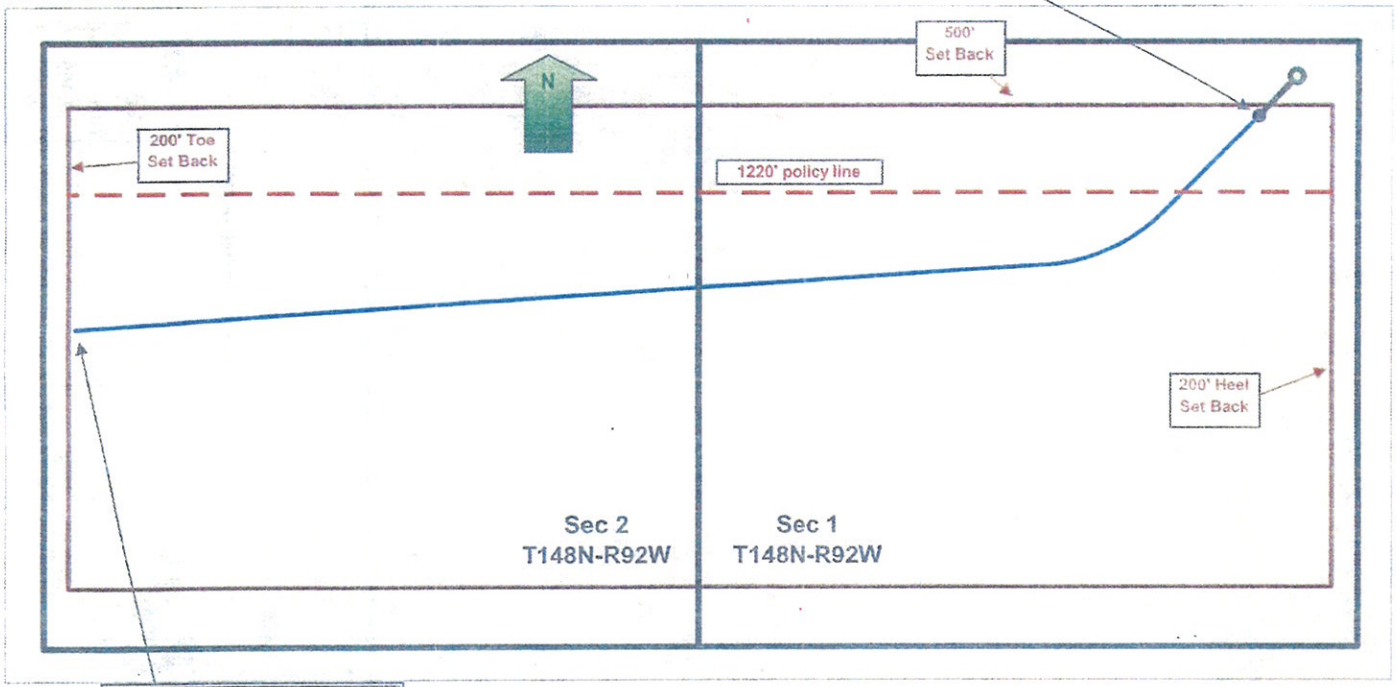


DIRECTIONAL DRILLING PLAN
FBIR Grinnell 41X-1

Location: NE NE Sec 1, 148N, 92W
Footage: 279 ft FNL 480 ft FEL
Elev: Graded Pad 1979', KB 2002'
Dunn County, ND
Scale: 1 sq = 100'

XTO ENERGY

7" Casing:	10,284	FT MD
BHL:	778 ft FEL	588 ft FNL
Coord:	298 W	309 S
Az to Shoe:	224.00	Deg

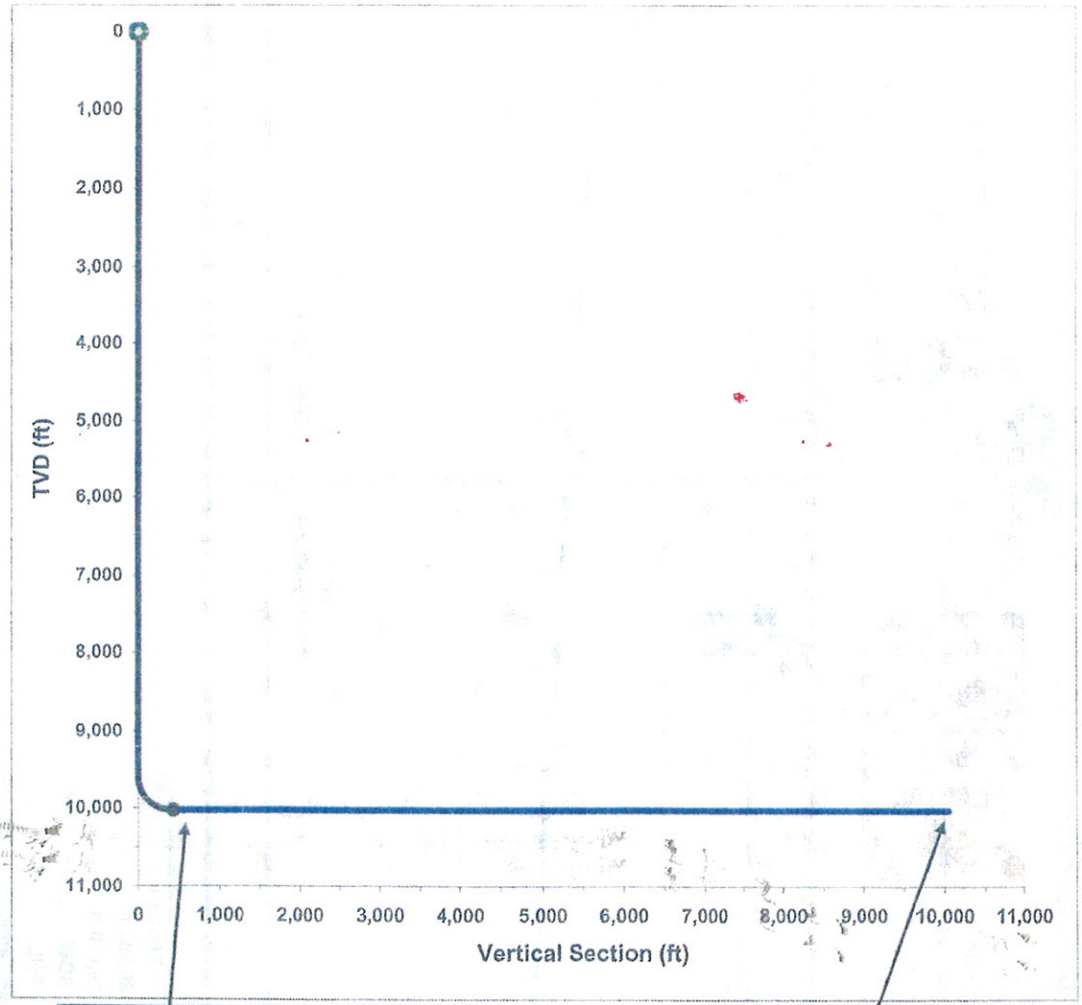


TARGET			
TMD:	20,283 ft		
TVD:	10,030 ft		
2,056	SOW	9,825	WOW
2,314	FNL	250	FWL
WH to BH Target Az		258.18	

DIRECTIONAL DRILLING PLAN
FBIR Grinnell 41X-1

Location:	NE NE Sec 1, 148N, 92W
Footage:	279 ft FNL 480 ft FEL
Elev:	Graded Pad 1979', KB 2002'
Dunn County, ND	
Scale: 1 sq = 500'	

XTO ENERGY



7" Casing:	10,284	FT MD	
BHL:	778 ft FEL	588 ft FNL	
Coord:	298 W	309 S	
Az to Shoe:	224.00	Deg	

TARGET			
TMD:	20,283 ft		
TVD:	10,030 ft		
2,056	SOW	9,825	WOW
2,314	FNL	250	FWL
WH to BH Target Az		258.18	

HORIZONTAL DRILLING PLAN - LATERAL NO.1

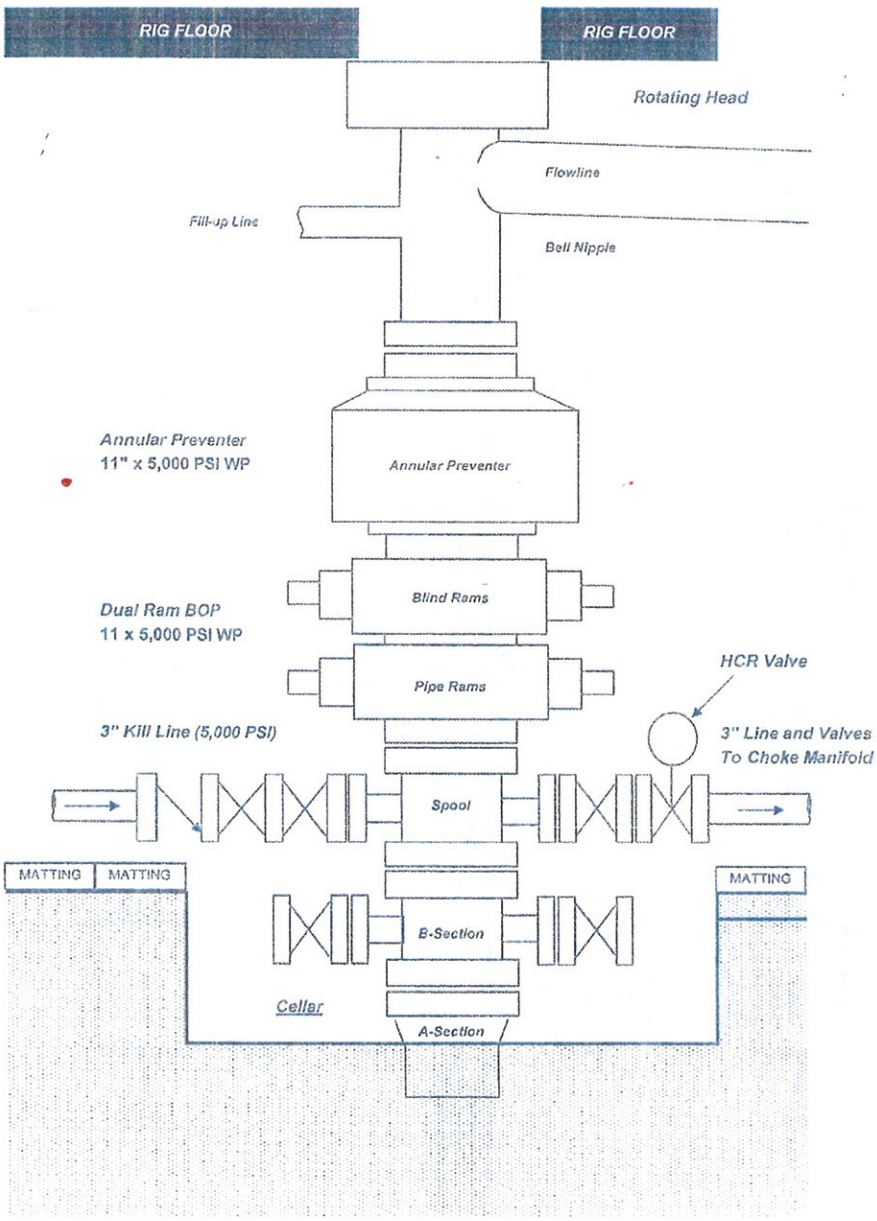
Company	XTO Energy, Inc		Target Inclination	90	
Well	FBIR Grinnell 41X-1		Magnetic Declination		
Build Rate	14.00		Target TVD	10,030	
Relative Turn Direction	R		Target Azimuth	258.18	224.00 Initial Azimuth
Turn Rate - Deg/100	4.00	42.19 Total Turn	Target Coordinates from Surf Locn	9825 W	2056 S 10,038 VS

Date	No.	DEPTH	INC.	AZM	C.L.	T.V.D.	V.S.	N/S	E/W	DLS	B./D.	Walk	BRN
	1	0				0.00	0.00	0.00 N	0.00 E	0.00			0.00
KOP1	2	9,621	0.00	0.00	9621	9620.74	0.00	0.00 N	0.00 E	0.00	0.00	0.00	14.00
	3	9,634	1.80	224.00	12.9	9633.60	0.20	0.15 S	0.14 W	14.00	14.00	1742.22	14.00
	4	9,646	3.60	224.00	12.9	9646.44	0.81	0.58 S	0.56 W	14.00	14.00	0.00	14.00
	5	9,659	5.40	224.00	12.9	9659.26	1.82	1.31 S	1.26 W	14.00	14.00	0.00	14.00
	6	9,672	7.20	224.00	12.9	9672.04	3.23	2.32 S	2.24 W	14.00	14.00	0.00	14.00
	7	9,685	9.00	224.00	12.9	9684.77	5.04	3.62 S	3.50 W	14.00	14.00	0.00	14.00
	8	9,698	10.80	224.00	12.9	9697.43	7.25	5.21 S	5.04 W	14.00	14.00	0.00	14.00
	9	9,711	12.60	224.00	12.9	9710.02	9.86	7.09 S	6.85 W	14.00	14.00	0.00	14.00
	10	9,724	14.40	224.00	12.9	9722.52	12.86	9.25 S	8.93 W	14.00	14.00	0.00	14.00
	11	9,736	16.20	224.00	12.9	9734.92	16.25	11.69 S	11.29 W	14.00	14.00	0.00	14.00
	12	9,749	18.00	224.00	12.9	9747.21	20.03	14.41 S	13.91 W	14.00	14.00	0.00	14.00
	13	9,762	19.80	224.00	12.9	9759.37	24.19	17.40 S	16.81 W	14.00	14.00	0.00	14.00
	14	9,775	21.60	224.00	12.9	9771.40	28.74	20.67 S	19.96 W	14.00	14.00	0.00	14.00
	15	9,788	23.40	224.00	12.9	9783.28	33.66	24.21 S	23.38 W	14.00	14.00	0.00	14.00
	16	9,801	25.20	224.00	12.9	9795.00	38.95	28.02 S	27.06 W	14.00	14.00	0.00	14.00
	17	9,814	27.00	224.00	12.9	9806.54	44.61	32.09 S	30.98 W	14.00	14.00	0.00	14.00
	18	9,826	28.80	224.00	12.9	9817.90	50.62	36.41 S	35.16 W	14.00	14.00	0.00	14.00
	19	9,839	30.60	224.00	12.9	9829.07	56.99	41.00 S	39.59 W	14.00	14.00	0.00	14.00
	20	9,852	32.40	224.00	12.9	9840.03	63.71	45.83 S	44.25 W	14.00	14.00	0.00	14.00
	21	9,865	34.20	224.00	12.9	9850.78	70.77	50.91 S	49.16 W	14.00	14.00	0.00	14.00
	22	9,878	36.00	224.00	12.9	9861.30	78.16	56.22 S	54.29 W	14.00	14.00	0.00	14.00
	23	9,891	37.80	224.00	12.9	9871.58	85.88	61.76 S	59.65 W	14.00	14.00	0.00	14.00
	24	9,904	39.60	224.00	12.9	9881.61	93.92	67.56 S	65.24 W	14.00	14.00	0.00	14.00
	25	9,916	41.40	224.00	12.9	9891.39	102.27	73.57 S	71.04 W	14.00	14.00	0.00	14.00
	26	9,929	43.20	224.00	12.9	9900.90	110.92	79.79 S	77.05 W	14.00	14.00	0.00	14.00
	27	9,942	45.00	224.00	12.9	9910.13	119.87	86.23 S	83.26 W	14.00	14.00	0.00	14.00
	28	9,955	46.80	224.00	12.9	9919.08	129.10	92.87 S	89.68 W	14.00	14.00	0.00	14.00
	29	9,968	48.60	224.00	12.9	9927.73	138.61	99.71 S	96.28 W	14.00	14.00	0.00	14.00
	30	9,981	50.40	224.00	12.9	9936.08	148.38	106.74 S	103.07 W	14.00	14.00	0.00	14.00
	31	9,994	52.20	224.00	12.9	9944.12	158.42	113.96 S	110.04 W	14.00	14.00	0.00	14.00
	32	10,006	54.00	224.00	12.9	9951.84	168.70	121.35 S	117.18 W	14.00	14.00	0.00	14.00
	33	10,019	55.80	224.00	12.9	9959.23	179.22	128.92 S	124.49 W	14.00	14.00	0.00	14.00
	34	10,032	57.60	224.00	12.9	9966.29	189.96	136.65 S	131.96 W	14.00	14.00	0.00	14.00
	35	10,045	59.40	224.00	12.9	9973.01	200.92	144.54 S	139.57 W	14.00	14.00	0.00	14.00
	36	10,058	61.20	224.00	12.9	9979.38	212.09	152.57 S	147.33 W	14.00	14.00	0.00	14.00
	37	10,071	63.00	224.00	12.9	9985.39	223.45	160.74 S	155.22 W	14.00	14.00	0.00	14.00
	38	10,084	64.80	224.00	12.9	9991.05	235.00	169.05 S	163.24 W	14.00	14.00	0.00	14.00
	39	10,096	66.60	224.00	12.9	9996.34	246.72	177.48 S	171.38 W	14.00	14.00	0.00	14.00
	40	10,109	68.40	224.00	12.9	10001.26	258.59	186.02 S	179.63 W	14.00	14.00	0.00	14.00
	41	10,122	70.20	224.00	12.9	10005.81	270.62	194.67 S	187.98 W	14.00	14.00	0.00	14.00
	42	10,135	72.00	224.00	12.9	10009.97	282.78	203.42 S	196.43 W	14.00	14.00	0.00	14.00
	43	10,148	73.80	224.00	12.9	10013.75	295.07	212.26 S	204.97 W	14.00	14.00	0.00	14.00
	44	10,161	75.60	224.00	12.9	10017.14	307.47	221.18 S	213.58 W	14.00	14.00	0.00	14.00
	45	10,174	77.40	224.00	12.9	10020.14	319.97	230.17 S	222.27 W	14.00	14.00	0.00	14.00
	46	10,186	79.20	224.00	12.9	10022.75	332.56	239.23 S	231.01 W	14.00	14.00	0.00	14.00
	47	10,199	81.00	224.00	12.9	10024.96	345.23	248.34 S	239.81 W	14.00	14.00	0.00	14.00
	48	10,212	82.80	224.00	12.9	10026.77	357.96	257.50 S	248.65 W	14.00	14.00	0.00	14.00
	49	10,225	84.60	224.00	12.9	10028.18	370.73	266.69 S	257.53 W	14.00	14.00	0.00	14.00
	50	10,238	86.40	224.00	12.9	10029.19	383.55	275.91 S	266.43 W	14.00	14.00	0.00	14.00
	51	10,251	88.20	224.00	12.9	10029.80	396.39	285.15 S	275.35 W	14.00	14.00	0.00	14.00
END OF CURVE	52	10,264	90.00	224.00	12.9	10030.00	409.25	294.39 S	284.28 W	14.00	14.00	0.00	0.00
CASING SHOE	53	10,284	90.00	224.00	20	10030.00	429.25	308.78 S	298.17 W	0.00	0.00	0.00	0.00
NO TURN	54	11,394	90.00	224.00	1100	10030.00	1529.25	1100.05 S	1062.30 W	0.00	0.00	0.00	0.00
	55	11,405	90.00	224.84	21.09	10030.00	1282.63	1115.12 S	1077.08 W	4.00	0.00	4.00	0.00
	56	11,426	90.00	225.69	21.09	10030.00	1300.34	1129.96 S	1092.05 W	4.00	0.00	4.00	0.00
	57	11,447	90.00	226.53	21.09	10030.00	1318.21	1144.59 S	1107.25 W	4.00	0.00	4.00	0.00
	58	11,468	90.00	227.37	21.09	10030.00	1336.25	1158.99 S	1122.66 W	4.00	0.00	4.00	0.00
	59	11,489	90.00	228.22	21.09	10030.00	1354.45	1173.16 S	1138.29 W	4.00	0.00	4.00	0.00
	60	11,510	90.00	229.06	21.09	10030.00	1372.80	1187.09 S	1154.12 W	4.00	0.00	4.00	0.00
	61	11,531	90.00	229.91	21.09	10030.00	1391.30	1200.80 S	1170.16 W	4.00	0.00	4.00	0.00
	62	11,552	90.00	230.75	21.09	10030.00	1409.95	1214.26 S	1186.39 W	4.00	0.00	4.00	0.00
	63	11,573	90.00	231.59	21.09	10030.00	1428.74	1227.49 S	1202.82 W	4.00	0.00	4.00	0.00
	64	11,595	90.00	232.44	21.09	10030.00	1447.67	1240.47 S	1219.45 W	4.00	0.00	4.00	0.00
	65	11,616	90.00	233.28	21.09	10030.00	1466.74	1253.21 S	1236.26 W	4.00	0.00	4.00	0.00
	66	11,637	90.00	234.12	21.09	10030.00	1485.94	1265.69 S	1253.26 W	4.00	0.00	4.00	0.00
	67	11,658	90.00	234.97	21.09	10030.00	1505.26	1277.93 S	1270.44 W	4.00	0.00	4.00	0.00
	68	11,679	90.00	235.81	21.09	10030.00	1524.71	1289.91 S	1287.80 W	4.00	0.00	4.00	0.00

	69	11,709	90.00	236.66	21.09	10030.00	1544.27	1301.63 S	1305.34 W	4.00	0.00	4.00	0.00
	70	11,721	90.00	237.50	21.09	10030.00	1563.95	1313.00 S	1323.04 W	4.00	0.00	4.00	0.00
	71	11,742	90.00	238.34	21.09	10030.00	1583.74	1324.30 S	1340.92 W	4.00	0.00	4.00	0.00
	72	11,763	90.00	239.19	21.09	10030.00	1603.63	1335.23 S	1358.95 W	4.00	0.00	4.00	0.00
	73	11,784	90.00	240.03	21.09	10030.00	1623.62	1345.91 S	1377.15 W	4.00	0.00	4.00	0.00
	74	11,805	90.00	240.87	21.09	10030.00	1643.72	1356.31 S	1395.50 W	4.00	0.00	4.00	0.00
	75	11,827	90.00	241.72	21.09	10030.00	1663.90	1366.44 S	1414.00 W	4.00	0.00	4.00	0.00
	76	11,848	90.00	242.56	21.09	10030.00	1684.17	1376.30 S	1432.64 W	4.00	0.00	4.00	0.00
	77	11,869	90.00	243.41	21.09	10030.00	1704.53	1385.88 S	1451.44 W	4.00	0.00	4.00	0.00
	78	11,890	90.00	244.25	21.09	10030.00	1724.96	1395.18 S	1470.37 W	4.00	0.00	4.00	0.00
	79	11,911	90.00	245.09	21.09	10030.00	1745.47	1404.20 S	1489.42 W	4.00	0.00	4.00	0.00
	80	11,932	90.00	245.94	21.09	10030.00	1766.05	1412.95 S	1508.63 W	4.00	0.00	4.00	0.00
	81	11,953	90.00	246.78	21.09	10030.00	1786.70	1421.40 S	1527.95 W	4.00	0.00	4.00	0.00
	82	11,974	90.00	247.62	21.09	10030.00	1807.40	1429.58 S	1547.40 W	4.00	0.00	4.00	0.00
	83	11,995	90.00	248.47	21.09	10030.00	1828.17	1437.46 S	1566.96 W	4.00	0.00	4.00	0.00
	84	12,016	90.00	249.31	21.09	10030.00	1848.98	1445.06 S	1586.64 W	4.00	0.00	4.00	0.00
	85	12,037	90.00	250.16	21.09	10030.00	1869.85	1452.37 S	1606.42 W	4.00	0.00	4.00	0.00
	86	12,059	90.00	251.00	21.09	10030.00	1890.75	1459.38 S	1626.32 W	4.00	0.00	4.00	0.00
	87	12,080	90.00	251.84	21.09	10030.00	1911.70	1466.10 S	1646.31 W	4.00	0.00	4.00	0.00
	88	12,101	90.00	252.69	21.09	10030.00	1932.68	1472.53 S	1666.40 W	4.00	0.00	4.00	0.00
	89	12,122	90.00	253.53	21.09	10030.00	1953.69	1478.65 S	1686.58 W	4.00	0.00	4.00	0.00
	90	12,143	90.00	254.37	21.09	10030.00	1974.73	1484.49 S	1706.85 W	4.00	0.00	4.00	0.00
	91	12,164	90.00	255.22	21.09	10030.00	1995.78	1490.02 S	1727.21 W	4.00	0.00	4.00	0.00
	92	12,185	90.00	256.06	21.09	10030.00	2016.85	1495.25 S	1747.64 W	4.00	0.00	4.00	0.00
	93	12,206	90.00	256.91	21.09	10030.00	2037.94	1500.18 S	1768.15 W	4.00	0.00	4.00	0.00
	94	12,227	90.00	257.75	21.09	10030.00	2059.03	1504.81 S	1788.73 W	4.00	0.00	4.00	0.00
	95	12,248	90.00	258.59	21.09	10030.00	2080.12	1509.13 S	1809.38 W	4.00	0.00	4.00	0.00
	96	12,270	90.00	259.44	21.09	10030.00	2101.21	1513.15 S	1830.08 W	4.00	0.00	4.00	0.00
	97	12,291	90.00	260.28	21.09	10030.00	2122.30	1516.86 S	1850.85 W	4.00	0.00	4.00	0.00
	98	12,312	90.00	261.12	21.09	10030.00	2143.37	1520.27 S	1871.66 W	4.00	0.00	4.00	0.00
	99	12,333	90.00	261.97	21.09	10030.00	2164.43	1523.37 S	1892.52 W	4.00	0.00	4.00	0.00
	100	12,354	90.00	262.81	21.09	10030.00	2185.46	1526.17 S	1913.43 W	4.00	0.00	4.00	0.00
	101	12,375	90.00	263.66	21.09	10030.00	2206.47	1528.65 S	1934.38 W	4.00	0.00	4.00	0.00
	102	12,396	90.00	264.50	21.09	10030.00	2227.45	1530.83 S	1955.36 W	4.00	0.00	4.00	0.00
	103	12,417	90.00	265.34	21.09	10030.00	2248.40	1532.69 S	1976.37 W	4.00	0.00	4.00	0.00
NO SURV	104	12,439	90.00	266.19	21.09	10030.00	2269.31	1534.25 S	1997.40 W	4.00	0.00	4.00	0.00
TD	105	20,283	90.00	266.19	7844.97	10030.00	10037.82	2056 S	9825 W	0.00	0.00	0.00	0.00
OPEN HOLE PAY													
10,000													

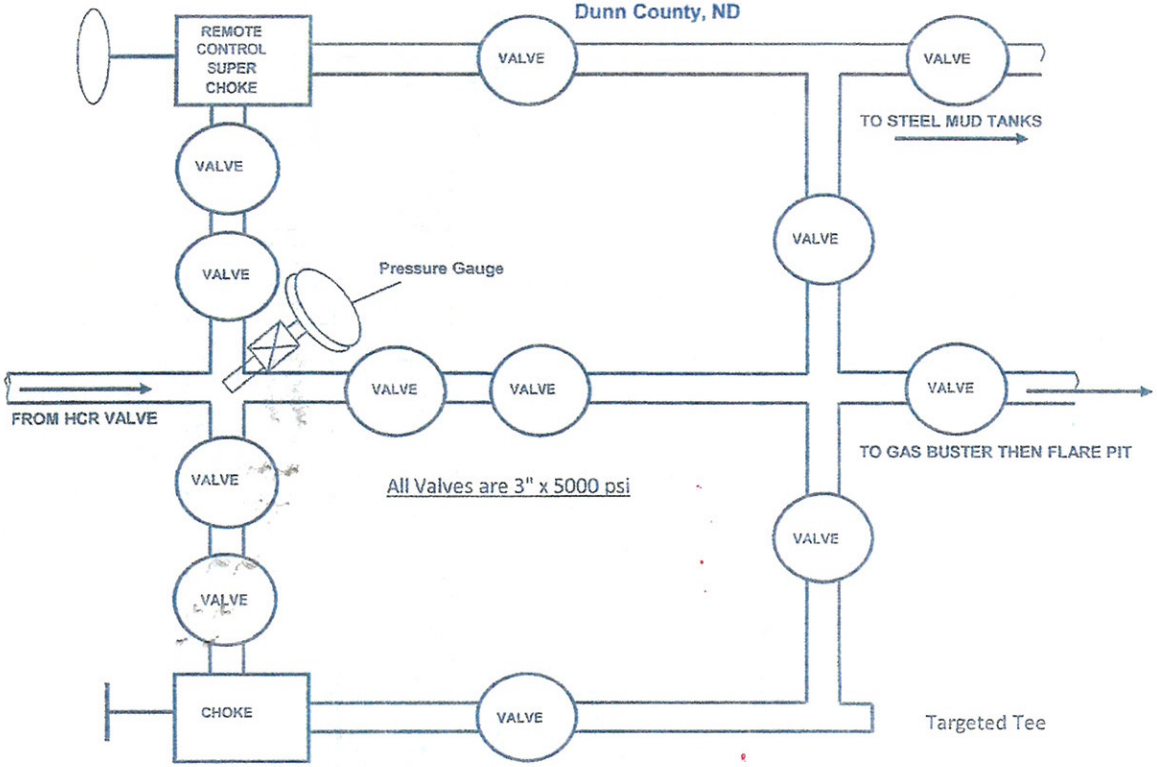
XTO Energy, Inc.
BOP STACK DIAGRAM

FBIR Grinnell 41X-1
Location: NE NE Sec 1, 148N, 92W
Footage: 279 ft FNL, 480 ft FEL
Elev: Graded Pad 1979', KB 2002'
Dunn County, ND



XTO Energy, Inc.
CHOKE MANIFOLD DRAWING

FBIR Grinnell 41X-1
Location: NE NE Sec 1, 148N, 92W
Footage: 279 ft FNL, 480 ft FEL
Elev: Graded Pad 1979', KB 2002'
Dunn County, ND



XTO ENERGY INC
H2S CONTINGENCY PLAN

FBIR Grinnell 41X-1

Location: NE NE Sec 1, 148N, 92W
Footage: 279 ft FNL, 480 ft FEL
Elev: Graded Pad 1979', KB 2002'

Dunn County, ND

Latitude 47.673356N
Longitude 102.334761W

H2S DRILLING OPERATIONS PLAN INDEX

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- B. Directions to Well Site
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- B. Gas Monitoring Equipment
- C. Crew Training and Protection
- D. Metallurgical Considerations
- E. Mud Program and Treating
- F. Well Control Equipment

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- B. Circulating Out Kick (Wait and Weight Method)
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- D. Drill Stem Testing of H2S Zones

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I. INTRODUCTION

A. OPERATOR'S ADDRESS AND PHONE

XTO ENERGY, INC.
PO BOX 1589 or 35399 Highway 23 - 8 miles East
SIDNEY, MT 59270
406-482-4000 (24 HR #)

B. DIRECTIONS TO WELL SITE

From Mandaree, ND: 15.3 mi E on BIA 12, 2.3 mi NE on BIA 13, 0.4 mi E on existing rd, 1.6 mi SE on proposed access rd to FBIR Headless Turtle 44X-32, 0.5 mi SE into loc'n

C. PURPOSE OF PLAN

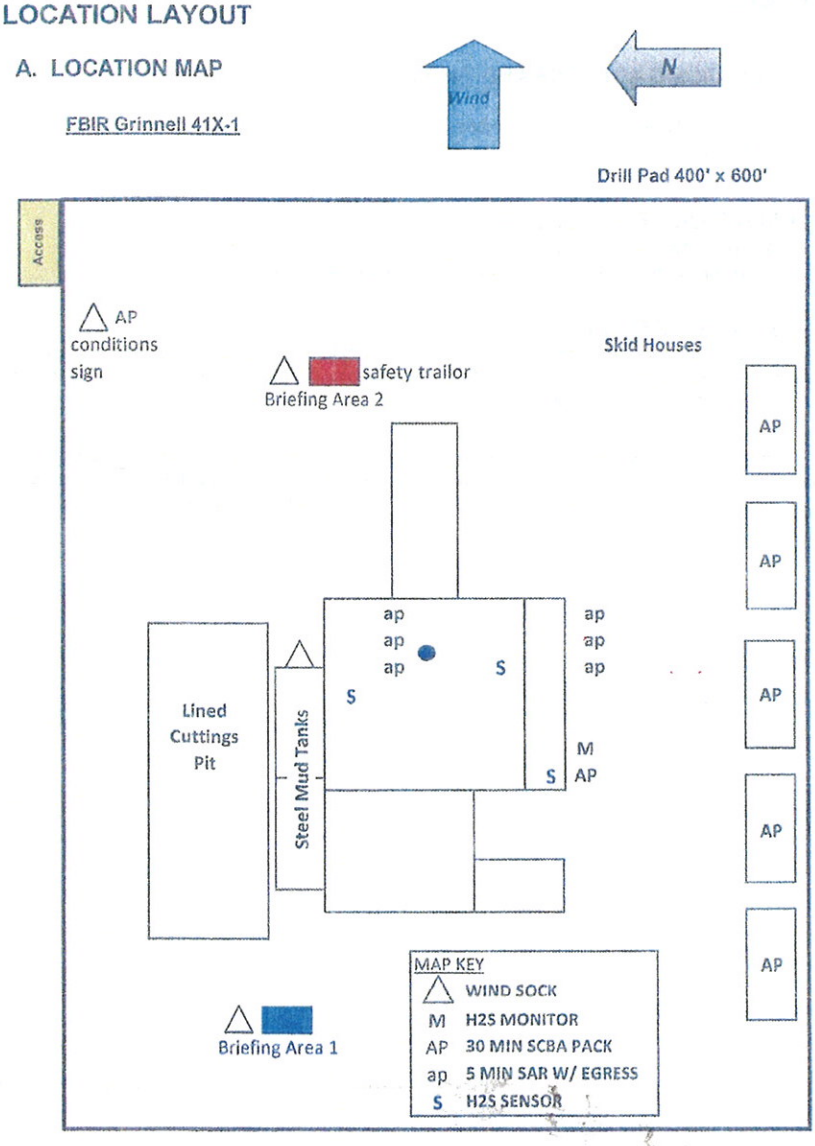
The purpose of this plan is to safeguard the lives of the public, contract personnel and company personnel in the event of equipment failure or disasters during drilling or completion operations in formations which may contain Hydrogen Sulfide Gas, H2S.

As a precautionary measure, this H2S Contingency Plan has been prepared to assure the safety of all concerned, should a disaster occur. However, the Operator's on-site representative may have specified materials and practices for the drilling or completion of this well, which supercede the minimum requirements as outlined in this plan.

II. LOCATION LAYOUT

A. LOCATION MAP

FBIR Grinnell 41X-1



III. SAFETY EQUIPMENT

All H2S related safety equipment must be installed, tested and operational at a depth of 500 feet above, or 3 days prior to penetrating the first zone expected to contain H2S (whichever comes first).

A. SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

1. Safety trailer w/ 10-380 C.F. cylinder air supply system
2. Sufficient low-pressure airline hose with quick connects
3. Six-airline mask w/emergency escape cylinders
4. Seven 30 minute self contained breathing apparatus
5. Airline manifolds and air pack stands to accompany air packs
6. Three windsocks, frames and poles
7. Oxygen powered resuscitator
8. One set of signs
9. One 36 unit first aid kit
10. One 30# fire extinguisher
11. One stretcher
12. Flare gun w/shells (supplied upon request)
13. Gastec pump type gas detector w/full range of H2S detector tubes
14. One air cylinder w/regulator and filler hose for briefing area #2
15. H2S and briefing area signs
16. Well condition signs and flags
17. Explosion-proof bug blower (provided upon request)
18. 3 channel electronic monitor w/explosion proof warning system
19. One SO2 (Sulfur Dioxide) portable detector (supplied if or when H2S is being flared)
20. Additional equipment - added as needed.

B. TYPE OF EQUIPMENT AND STORAGE LOCATIONS

1. There will be six Scott airline masks on location. Five will be located on the rig floor with access to the shale shaker. One will be located in the derrick. Each mask will have an easily accessible air line hose.

2. There will be seven 30-minute self-contained breathing apparatus on location. They will be positioned as follows: one at Operator's representative's trailer, one at Tool Pusher's trailer, one at Briefing Area #1 one at Briefing Area #2, one at rig dog house stairway, one at mud logger's trailer and one at hopper area.

3. A Gastec, pump type, gas detector with low and high range detector tubes will be located in the doghouse

4. Two cleared, briefing areas will be designed as Safe Briefing Areas #1 and #2.

5. The Briefing Area most upwind is designated as Safety Briefing Area #1. In an emergency, personnel must assemble at this upwind area for instructions from their supervisor.

6. The H2S Safety Trailer will contain a cascade system of (10) 380 C.F. air cylinders that will provide a continuous air supply to air lines located on the rig. It will also contain one resuscitator, one 30 minute air pack and one stretcher, one 36 unit first aid kit, one 30# dry chemical fire extinguisher, and will have a windsock or streamer to indicate wind direction.

7. Two other windsocks will be installed so as to be visible from all parts of the location.

8. A well condition warning sign will be displayed at the location entrance to advise of current operating conditions.

9 A list of emergency telephone numbers will be kept on rig floor, tool pusher's trailer, the Operator's on-site representative's trailer and in the Safety Trailer.

10. A barricade will be available to block the entrance to location should an emergency occur. In most cases, a vehicle will be used to block the entrance.

11. A three-channel H2S monitor will be located in the doghouse. The three sensors will be installed: one on the shale shaker, one in the cellar and one near the bell nipple.

12. An undulating high and low pitch siren and light will be installed on the derrick "A" leg.

13. If H2S concentrations reach 10 ppm, an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H2S.

14. Any time it is necessary to flare gas containing H2S, a Sulfur Dioxide monitor will be used to determine SO2 concentrations

C. MAXIMUM NUMBER OF PEOPLE ON LOCATION AT ANY ONE TIME

1. There will be a maximum of 13 persons on location at any one time, unless additional respirators are provided during special operations where more than 13 persons will be on location.

IV. OPERATING PROCEDURES

A. BLOWOUT PREVENTION MEASURES DURING DRILLING

1. Blowout Prevention Requirements: All BOP equipment shall meet the American Petroleum Institute specifications as to materials acceptable for H2S service and tested accordingly (or to BLM specifications).

2. Drilling String Requirements: All drill string components are to be of material that meets the American Petroleum Institute's specifications for H2S service. All drill string components should be inspected to IADC critical service specifications prior to running in well.

B. GAS MONITORING EQUIPMENT

1. A continuous H2S detection system, consisting of three H2S detectors and an audible/visual warning system will be in operation during all phases of this H2S Contingency Plan. The detection system will be adjusted and calibrated such that an H2S exposure of 10 ppm or higher (at any sensor) will trigger the visual portion (blinking or rotating light), and an H2S exposure of 15 ppm or higher (at any sensor) will trigger the audible portion (wailing or yelping siren) of the warning system (i.e., H2S continually present at or above threshold levels). A trained operator or H2S supervisor will monitor the H2S detection system.

2. When approaching or completing H2S formations, crewmembers may attach 8-hour electronic H2S personnel monitors to their person.

3. Hand held H2S sampling gas detectors will be used to check areas not covered by automatic monitoring equipment.

C. CREW TRAINING AND PROTECTION

1. All personal working at the well site will be properly trained in accordance with the general training requirements outlined in the API Recommended Practices for Safe Drilling of Wells Containing H2S. The training will include, but not be limited to, the following:

a. General information about H2S and SO2 gases
b. Hazards associated with H2S and SO2 gases
c. Safety equipment on location
d. Proper use and care of personal protective equipment
e. Operational procedures in dealing with H2S gas
f. Evacuation procedures
g. First aid, reviving an H2S victim, toxicity, etc.
h. Designated Safe Briefing Areas
i. Buddy System
j. Regulations
k. Review of Drilling Operations Plan

2. Initial training shall be completed when drilling reaches a depth of 500' above or 3 days prior to penetrating (whichever comes first) the first zone containing or expected to contain H2S.

3. Weekly H2S and well control drills for all personnel on each working crew shall be conducted.

4. Safety Equipment: As outlined in the Safety Equipment Index, H2S safety protection equipment will be available to/or assigned each person on location.

D. METALLURGICAL CONSIDERATONS

1. Steel drill pipe used in H2S environments should have yield strength of 95,000 psi or less due to potential embrittlement problems. Drill stem joints near the top of the drill string are normally under the highest stress levels during drilling and do not have the protection of elevated down hole temperatures. These factors should be considered in design of the drill string.
Precautions should be taken to minimize drill string stress caused by conditions such as excessive dogleg severity, improper torque, whip, abrasive wear or tool joints and joint imbalance. American Petroleum Institute, Bulletin RR 7G, will be used as a guideline for drill string precautions.

2. Corrosion inhibitors may be applied to the drill pipe or to the mud system as an additional safeguard

3. Blowout preventors should meet or exceed the recommendations for H2S service as set forth in the latest edition of API RI 53.

E. MUD PROGRAM AND TREATING

1. It is of utmost importance that the mud be closely monitored for detection of H2S and reliability of the H2S treating chemicals.

2. Identification and analysis of sulfides in the mud and mud filtrates will be carried out per operator's prescribed procedures.

3. The mud system will be pre-treated with Zinc Carbonate, Ironite Sponge or similar chemicals of H2S control prior to drilling into the H2S bearing formation. Sufficient quantities of corrosion inhibitor should be on location to treat the drill string during Drill Stem Test Operations. Additionally, Aqua Ammonia should be on hand to treat the drill string for crew protection, should H2S be encountered while tripping the drill string following drill stem testing

F. WELL CONTROL EQUIPMENT

1. Flare System
    a. A flare system shall be designed and installed to safely gather and burn H2S bearing gas.
    b. Flare lines shall be located as far from the operating site as feasible and in a manner to compensate for wind changes.
    c. The flare line mouth shall be located not less then 150' from wellbore.
    d. Flare lines shall be straight unless targeted with running tees.

2. Remote Controlled Choke: A remote controlled choke shall be installed for all H2S drilling and where feasible for completion operations. A remote controlled valve may be used in lieu of this requirement for completions operations.

3. Mud-gas separators and rotating heads shall be installed and operable for all exploratory wells.

V. OPERATING CONDITIONS

A Well Condition Sign and Flag will be posted on all access roads to the location. The sign shall be legible and large enough to be read by all persons entering the well site and be placed a minimum of 200', but no more than 500', from the well site to allow vehicles to turn around at a safe distance prior to reaching the site.

A. DEFINITION OF WARNING FLAGS

2. Condition Yellow: Potential Danger. Any operation where the possibility of encountering H2S exists and in all situations where concentrations of H2S are detected in the air below the threshold level (10 ppm).

a. Cause of condition:
- *Circulating up drill breaks
- *Trip gas after trip
- *Circulating out gas on choke
- *Poisonous gas present, but below threshold concentrations
- *Drill stem test

b. Safety Action:
- *Check safety equipment and keep it with you
- *Be alert for a change in condition
- *Follow instructions

a. Safety action:
- *MASK UP. All personal will have protective breathing equipment with them. All nonessential personnel will move to the Safe Briefing Area and stay there until instructed to do otherwise. All essential personnel (those necessary to maintain control of the well) shall wear breathing apparatus to perform operations related to well control.

b. Order evacuation of local people within the danger zone. Request help from local authorities, State Police, Sheriff's Dept. and Service Representative.

c. The decision to ignite the well is the responsibility of the Operator's on-site representative and should be made only as a last resort, when it is clear that:
- *human life is endangered
- *there is no hope of controlling the well under prevailing conditions

B. CIRCULATING OUT KICK (WAIT AND WEIGHT METHOD)

If it is suspected that H2S is present with the gas whenever a kick is taken, the wait and weight method of eliminating gas and raising the mud will be followed (below):

a. Increase density of mud in pits to 'kill' weight mud.

b. Open choke and bring pump to initial circulating pressure by holding casing pressure at original value until pump is up to predetermined speed.

c. When initial circulating pressure is obtained on drill pipe, zero pump stroke counter and record time.

d. Reduce drill pipe pressure from initial circulating pressure to final circulating pressure by using pump strokes and/or time according to graph

e. When 'kill' weight mud is at the bit, hold final circulating pressure until kill weight mud is to surface.

f. When the well has been put on the choke and circulation has been established, the following safety procedures must be initiated:
- *determine when gas is anticipated to reach surface
- *move all non-essential personnel to Safe Briefing Area
- *check out protective breathing apparatus to all remaining personnel (apparatus is to be kept with them until the kick has been completely

circulated out)
*mud men will see that the proper amount of H2S scavenging chemical is in the mud and record times checked
*ensure ignition flare is burning and valves are open to designated flare stacks

C. CORING OPERATIONS IN H2S BEARING ZONES

1. Personal protective breathing apparatus will be worn from 10 to 15 stands in advance of retrieving the core barrel. Cores to be transported should be sealed and marked indicating the presence of H2S.
   a. Yellow Caution Flag will be flown at the well condition sign.
   b. The "NO SMOKING" rule will be enforced

D. DRILL STEM TESTING OF H2S ZONES

1. The DST subsurface equipment will be suitable for H2S service as recommended by the API.

2. Drill stem testing of H2S zone will be conducted in daylight hours.

3. All non-essential personnel will be moved to an established safe area or off location.

4. The "NO SMOKING" rule will be enforces.

5. DST fluids will be circulated through a remote controlled choke and a separator to permit flaring of gas. A continuous pilot light will be used.

6. A yellow or red flag will be flown at entrance to location depending on present gas condition.

7. If warranted, use Aqua Ammonia for neutralizing the toxicity of H2S from drill string. Aqua Ammonia should be on location even if not used for DST.

8. On completion of DST, if H2S contaminated formation fluids or gases are present in drill string, floor workers will be masked up before test valve is removed from drill string and continue "mask on" condition until such time that readings in work area do not exceed 15 ppm of H2S gas.

VI. EMERGENCY PROCEDURES

A. SOUNDING ALARM

1. The fact is to be instilled in the minds of all rig personnel that the sounding of the alarm means only one thing - H2S IS PRESENT and everyone is to proceed to his assigned station and the contingency plan is put into effect.

B. DRILLING CREW ACTIONS

1. All personnel will don their protective breathing apparatus. The driller will take necessary precautions as indicated in operating procedures.

2. The Buddy system will be implemented. All personnel will act upon directions from the Operator's on-site representative.

3. If there are non-essential personnel on location, they will move off location.

4. Entrance to the location will be patrolled, and the proper well condition flag will be

displayed at the entrance to the location.

C. RESPONSIBILITIES OF PERSONNEL

1. In order to assure the proper execution of this plan, it is essential that one person be responsible for and in complete charge of implementing these procedures. The responsibe person will be as follows:
   a. The Operator's on-site representative (consultant) or his assistant
   b. Contract Tool Pusher.

D. STEPS TO BE TAKEN

1. Contact the main office(s) of the Operator &/or the Rig Contractor as listed in this plan below (by the quickest means of communications):

2. An assigned crewmember will blockade the entrance to the location. No unauthorized personnel will be allowed entry into the location.

3. The Operator's on-site representative will remain on location and attempt to regain control of the well.

4. The Rig Contractor's rig superintendent will begin evacuation of those persons in immediate danger. He will begin by telephoning residents in the danger zone. In the event of no contact by telephone, the tool pusher will proceed at once to each dwelling for a person-to-person contact. In the event the tool pusher cannot leave the location, he will assign a responsible crewmember to proceed in the evacuation off local residents. Upon arrival, the Sheriff's Department and safty equipment contractor's personnel will aid in further evacuation.

E. COMPANY & CONTACT PERSONNEL

1. Operator's Drilling Supt	Office	406-482-6808
Kal Beckman	Home	701-572-6057
	Cell	701-570-2536
2. Operator's Drilling Engineer	Office	405-319-3285
Ross Lubbers	Home	405-513-5955
	Cell	405-659-8563
Cole Walton	Office	405-319-3256
	Cell	405-420-5915
3. Patterson Drilling Supt	Office	701-483-6640
Jeff Long	Cell	701-319-2707
4. Nabors Drilling Supt	Office	701-572-6704
Scott Reid	Home	701-385-4697
	Cell	701-848-6227
5. Petroleum Experience -- Drilling Consultants		
Pete Peterson	Office	701-774-8357

F. LEAK IGNITION

Leak Ignition Procedure: (used to ignite a leak in the event it becomes necessary to protect the public)

1. Two men, the Operator's on-site representative and the Contractor's Drlg Superintendent or safety equipment provider's representative, wearing self-contained pressure demand air masks must determine the perimeter of the flammable area. This should be done with one man using an H2S detector and the other one using a flammable gas detector. The flammable perimeter should be established at 30% to 40% of the lower flammable limits.

2. After the flammable perimeter has been established and all employees and citizens have been removed from the area, the ignition team should move to the up-wind area of the leak perimeter and fire a flare into the area. If the leak isn't ignited on the 1st attempt, move in 30 - 40 feet and fire again. Continue moving in and firing until the leak is ignited or the flammable gas detector indicates the ignition team is moving into the hazardous area. If trouble is incurred in igniting the leak by firing toward the leak, try firing 40 - 90 feet to each side of the area where you have been firing. If still no ignition is accomplished, ignite the copper line burner and push it into the leak area. This should accomplish ignition. If ignition is not possible due to the makeup of the gas, the toxic leak perimeter must be established and maintained to ensure evacuation is completed and continue until the emergency is secure.

3. The following equipment and man-power will be required to support the ignition team:

   a. One flare gun.
   b. Four pressure demand air packs.
   c. Two nylon ropes tied to the ignition team.
   d. Two men in a clear area equipped with air packs.
   e. Portable butane bottle with copper line.

4. The person with the final authority will then ignite the well.

G. GENERAL EQUIPMENT

1. Two areas on the location will be designated as briefing areas. The one that is upwind from the well will be designated as the "Safe Briefing Area" or "Briefing Area #1".

2. In the case of an emergency, personnel will assemble in the upwind area as per prior instructions from the operator's representative.

3. The H2S trailer provided by the safety contractor will contain 10 air cylinders, a resuscitator, one 30 minute air pack and will have a windsock.

4. Two other windsocks will be installed.

5. A condition warning sign will be displayed at the location entrance.

6. A list of emergency telephone numbers will be kept on the rig floor, tool pusher's trailer and the Operator's on-site representative's trailer.

7. Two barricades will be available to block the entrance to location.

8. An undulating high and low pitch siren will be installed.

9. A telephone line or mobile phone will be available at the well site for incoming and outgoing communications.

VII. APPENDIX

A. EMERGENCY & MEDICAL FACILITIES:

NORTH DAKOTA EMERGENCY ASSISTANCE:	800-472-2121
AMBULANCE SERVICE:	
BELFIELD, ND	911
DICKINSON, ND	911
SIDNEY, MT	406-488-2100
TIOGA, ND	701-664-2200
WILLISTON, ND	911
WATFORD CITY, ND	701-444-3516
KILLDEER, MANNING, ND	911
HOSPITALS:	
SIDNEY HEALTH CENTER - SIDNEY, MT	406-488-2100
MERCY MEDICAL CENTER - WILLISTON, ND	701-774-7400
McKENZIE COUNTY MEMORIAL HOSPITAL - WATFORD CITY	701-842-3000
ST. JOSEPH'S HOSPITAL - DICKINSON, ND	701-225-7200
TIOGA MEDICAL CENTER	701-568-3626

B. LAW ENFORCEMENT AND FIRE FIGHTING AGENCIES

POLICE or SHERIFF:			
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT	911	OR	406-433-2809
McKENZIE COUNTY			701-444-3654
TIOGA - WILLIAMS COUNTY	911	OR	701-664-2514
WATFORD CIY, ND	911	OR	701-842-2400
MANNING, ND SHERIFF	911	OR	701-573-4449
FIRE:			
ALEXANDER, ND			911
ARNEGARD, ND			701-586-3500
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT			406-433-1122
TIOGA, ND			701-664-2200
WATFORD CITY, ND			701-842-3516
WILLISTON, ND			911

C. WELL CONTROL SPECIALISTS:

BOOTS AND COOTS	713-931-8884
RED ADAIR COMPANY INC	713-464-0230
WILD WELL CONTROL	701-353-5481

D: GOVERNMENTAL AGENCIES:

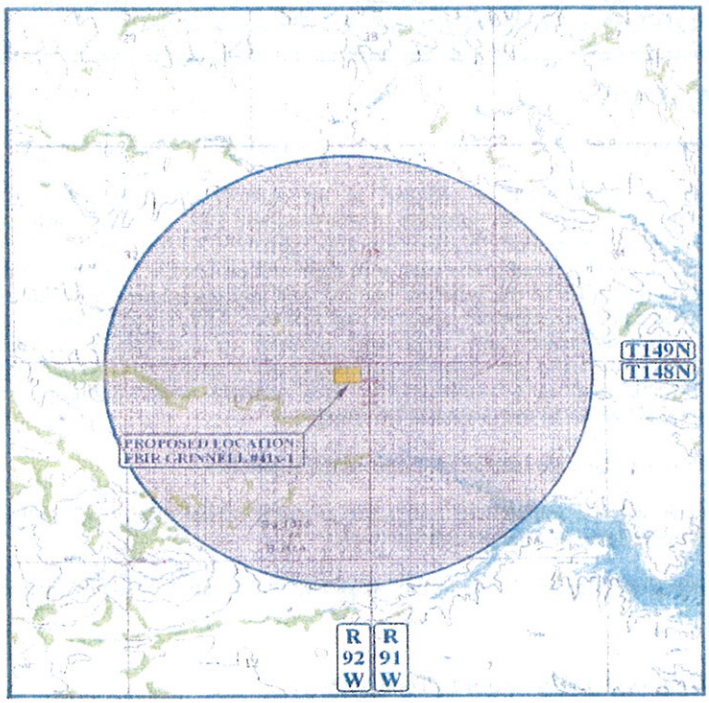
STATE WATER COMMISSION	701-224-4940
NDIC:	
CHIEF ENFORCEMENT OFFICER	701-224-2969
STATE GEOLOGIST	701-777-2231
NORTH DAKOTA STATE DEPARTMENT OF HEALTH:	
DIVISION OF ENVIRONMENTAL ENGINEERING	701-224-2348
DIVISION OF WATER &POLLUTION CONTROL:	
BISMARCK, ND	701-224-2375
DISTRICT FOREST SERVICE RANGER:	
DICKINSON, ND	701-225-5151
MEDORA, ND	701-623-4466
WATFORD CITY, ND	701-842-2393
BUREAU OF LAND MANAGEMENT:	
DICKINSON, ND	701-225-9148
U.S. CORPS OF ENGINEERS:	
RIVERDALE, ND	701-654-7411
OIL SPILLS DISASTER REPORTING:	800-424-8802

E. RADIO & TELEVISION STATIONS:

KEYZ AM 660	701-572-5371
KYYZ FM 96.1	701-572-3911
KDIX	701-225-5133
KRRB-FM	701-227-1222
KUMV TV	701-572-4676
KXMD TV	701-572-2345
KQCD TV	701-225-6843

VIII. RESIDENTS AND LANDOWNERS

A. 1 MILE RADIUS EXPOSURE MAP



B. RESIDENTS WITHIN 1 MILE AND PHONE NUMBERS

None

XTO ENERGY, INC.
FBIR Grinnell 41X-1
BIA Lease # 7420A49475
NE¼NE¼ (Lot 1), Section 33, T149N, R91W
Dunn County, North Dakota

MULTI-POINT SURFACE USE & OPERATIONS PLAN

A. EXISTING ROADS -

1. The proposed well site is staked and four (4) 200-foot reference stakes are present.

2. From Mandaree, North Dakota proceed in an easterly direction along BIA 12 approximately 15.3 miles to the junction of this road and BIA 13 to the northeast; turn left and proceed in a northeasterly direction approximately 2.3 miles to the junction of this road and an existing road to the east; turn right and proceed in an easterly direction approximately 0.4 miles to the junction of this road and the beginning of an existing two-track road and the proposed access road for the FBIR HeadlessTurtle 44X-32 location to the southeast; turn right and proceed in a southeasterly direction approximately 1.6 miles to the beginning of the proposed access road to the southeast; follow two-track road in a southeasterly, then easterly, then southerly direction approximately 0.5 miles to the proposed location.

3. Access roads - All roads are labeled on Topo Maps A and B.

4. Existing roads will be maintained and kept in good repair during all drilling and completion operations associated with this well.

5. Total distance from Mandaree, ND to the proposed well location is approximately 20.1 miles.

B. PLANNED ACCESS ROADS - Refer to Topo Map "B"

Approximately 146' of new road construction will be required for access to the proposed FBIR Grinnell 41X-1 well location.

1. Width - fourteen (14) foot running surface with a sixteen (16) foot sub-grade, crowned and ditched.

2. Construction standard - the access road will be constructed in accordance with roading guidelines established for oil & gas exploration and development activities as referenced in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.

   All topsoil will be stripped from the access road route prior to performing any further construction activities thereon. The salvaged topsoil will be stockpiled apart from subsoil materials for future reclamation of the access road right-of-way. The topsoil will be covered in matting and/or seeded to prevent erosion and maintain fertility.

   If soils along the access road route are dry during construction, water will be applied to the road surface to facilitate soil compaction and minimize soil loss as a result of wind erosion.

3. Maximum grade - eight (8) percent or less.

4. Turnouts – as deemed necessary

5. Drainage design - the access road will be upgraded and maintained as necessary to prevent soil erosion and accommodate all-weather traffic. Road will be crowned and ditched with water turnouts installed as necessary to provide for proper drainage along the access road route.

6. Culverts, cuts and fills – one (1) culvert will be required at the entrance to the location and one in the existing two track road, which will be upgraded. (See Topo Map B)

7. Surfacing material - the access road will be surfaced with gravel or scoria purchased from a local contractor having a permitted source of materials within the general area, as required by the Authorized Officer, Bureau of Indian Affairs.

8. Gates, cattle guards or fence cuts - one (1) cattle guard will be required at the entrance of the location as the entire location will be fenced for drilling and completion operations. See Topo Map B and Figure #1 for location of cattle guards.

    a. The cattle guard will be installed in accordance with roading guidelines contained in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.
    b. One fence cut will be required.

9. Road maintenance - the road surface and shoulders will be kept in a safe and useable condition and will be maintained in accordance with the original construction standards.

    All drainage ditches and culverts will be kept clear and free-flowing, and will also be maintained in accordance with the original construction standards.

    The access road right-of-way will be kept free of trash during all operations.

10. The proposed access road route has been centerline staked.

C. EXISTING WELLS WITHIN A ONE (1) MILE RADIUS -

1. Existing Wells – Refer to Topo Map C showing the location of the proposed well and the point of radius for the one mile area of review.

a. Water wells	- none known
b. Abandoned wells	- none known
c. Temporarily abandoned wells	- none known
d. Disposal wells	- none known
e. Drilling wells	- none known
f. Producing wells	- none known
g. Shut-in wells	- none known
h. Injection wells	- none known
i. Monitoring wells	- none known

D. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES OWNED BY XTO ENERGY, INC. WITHIN A ONE (1) MILE RADIUS

1. Existing Facilities

   a. Tank batteries - none.
   b. Production facilities - none.
   c. Oil gathering lines - none.
   d. Gas gathering lines - none.

2. New Facilities Contemplated

   a. All production facilities will be located on the disturbed portion of the well pad and at a minimum of twenty (25) feet from the toe of the back slope or top of the fill slope. See Figure #1 and Figure #2 for plats depicting the original contours of the location and the proposed cuts and fills and the typical cross sections for the location.

   b. Production facilities will require a working area approximately 300' X 500' in size and will generally consist of a pumping unit at each well head, tank battery, heater-treater and emergency/flare pit.

      A berm will be constructed completely around those production facilities designed to hold fluids (i.e., production tanks, produced water tanks and/or heater-treater). These berms will be constructed to hold >110% of the capacity of the largest tank plus one full day's production, and is independent of the back cut. See Figure #3 for a diagram of the proposed facilities.

      Load out lines will be located within the tank battery berm and will have a drip barrel with steel mesh guard installed under the outlet.

3. Prior to the commencement of drilling operations, the FBIR Grinnell 41X-1 well location will be fenced, having four (4) strands of barbed wire held in place by metal side posts and wooden corner "H" braces in order to protect both livestock and wildlife.

4. During drilling and subsequent operations, all equipment and vehicles will be confined to the access road and any additional areas which may be specified in the approved Application for Permit to Drill.

5. Reclamation of disturbed areas no longer needed for operations will be accomplished by grading, leveling and seeding as recommended.

E. LOCATION AND TYPE OF WATER SUPPLY

1. Fresh water for use in drilling operations will be obtained from the water supply close to the town of Killdeer, North Dakota.

F. SOURCE OF CONSTRUCTION MATERIALS

1. Any construction materials (gravel or scoria) which may be required for surfacing of the drill pad will be obtained from a private contractor having a previously approved source of materials within the general area.

G. METHODS OF HANDLING WASTE MATERIALS

1. Cuttings - the drilled cuttings will be deposited in the cuttings pit as shown on Figure #4 and Figure #5. The cuttings pit will be designed to prevent the collection of surface runoff and will be constructed entirely in cut section of the well location (see Figure #1). If active drilling is not occurring, the cuttings pit will have nylon netting placed over the entire pit to prevent migratory birds and other wildlife from entering the pit. A maximum mesh size of 1.5 inches will allow for snow loading and will exclude most birds. The netting will be placed at least five feet from the top surface of any pit fluids to prevent the mesh from sagging into the fluids during snow loading events or high winds. The cuttings pit will be appropriately fenced to prevent access by persons, wildlife or livestock. Three non-working sides will be fenced during drilling operations and the fourth side will be fenced once drilling and/or completion rigs have been moved off location. If completion does not occur immediately subsequent to drilling operations, the fourth side will be fenced immediately upon drilling rig release.

   Reclaiming and backfilling will occur when completion operations are finished by solidifying with fly ash and burial in accordance with North Dakota Industrial Commission, Department of Mineral Resources, rules and regulations.

2. Drilling fluids utilized in the fresh water mud systems will be contained in steel tanks. Drilling fluids utilized in the oil-based mud system will be contained in steel tanks on location. During drilling, there will be a 2' berm surrounding the oil based mud tanks. All free fluid will be reclaimed from the cuttings pit before solidification.

3. Produced fluids - liquid hydrocarbons produced during completion operations will be placed in test tanks on the location.

   Any spills of oil, gas, salt water or any other potentially hazardous substance will be cleaned up and immediately removed to an approved disposal site.

4. Sewage - portable, self-contained chemical toilets will be provided for human waste disposal. As required, the toilet holding tanks will be pumped and the contents disposed of in an approved sewage disposal facility.

5. Garbage and other waste material - all garbage and non-flammable waste materials will be contained in a self contained, portable dumpster or trash cage. Upon completion of operations, or as needed, the accumulated trash will be hauled off-site to a state approved sanitary landfill.

   Used motor oil (change oil) will be placed in closed containers and disposed of at an authorized disposal site.

No trash will be placed in the reserve pit.

6. Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage will be cleaned up and removed from the well location. No potentially adverse materials or substances will be left on the location.

7. Hazardous Materials – XTO Energy, Inc. maintains responsibility for recognizing and handling hazardous materials. All hazardous materials will be handled in an appropriate manner to minimize the potential for leaks or spills to the environment. All spills of reportable quantity will be contained, reported and cleaned up in accordance with State and Federal regulations.

H. ANCILLARY FACILITIES

None anticipated.

I. WELLSITE LAYOUT

1. Figure #1 shows the drill site layout as staked. Cross-sections have been drafted to visualize the planned cuts and fills across the proposed well location (refer to Figure #2). All topsoil will be stripped from the location (including areas of cut, fill, and/or subsoil storage) and stockpiled in two separate areas for future reclamation of the well site. The topsoil will be covered in matting and/or seeded to prevent erosion and maintain fertility. Best Management Practices including matting and straw booms/waddles will be used to aid in prevention of soil erosion. Fill slopes shall be covered in matting immediately.

2. Figure #4 is a diagram showing a typical location layout. No permanent living facilities are planned on the FBIR Grinnell 41X-1 well location.

3. All equipment and vehicles will be confined to the approved areas in this Application for Permit to Drill (i.e., access road, well pad, spoil and topsoil storage areas).

4. The cuttings pit will be lined with a minimum 12 mil liner and designed to maintain a two foot free board. See Figure #6 for a spec sheet on the proposed liner.

5. Prior to the commencement of drilling operations, the entire well location will be fenced with four (4) strands of barbed wire. The fencing will be maintained until such time as the well bore has been physically plugged and abandoned and the well location has been successfully reclaimed.

6. Any hydrocarbons on the pit will be removed as soon as possible after drilling operations are completed.

J. PLANS FOR SURFACE RECLAMATION

1. Rat and mouse holes will be backfilled immediately upon release of the drilling rig from the location.

2. The cuttings pit will be solidified with fly ash as soon as possible after rig release and the liner will be folded over and the cuttings buried on site.

3. Producing Operations:

   a. Backfilling, leveling and re-contouring are planned as soon as possible after cessation of drilling and completion operations.

   b. All disturbed surfaces (including the access road and well pad areas) will be reseeded using a seed mixture to be recommended by the Authorized Officer, Bureau of Indian Affairs in consultation with the surface allottee as appropriate.

4. Abandoned Well Location:

   a. Upon final abandonment of the well location, both the access road and well location will be restored to approximately the original ground contour(s) by replacing the fill material into the cut and over the back slope.

K. SURFACE OWNERSHIP

The well site and access road are situated on Tribal lands within the Fort Berthold Indian Reservation. The owner is:

Three Affiliated Tribes
404 Frontage Road
New Town, ND 58763

L. OTHER INFORMATION

1. Surface Use Activities:

   a. The primary surface use is for livestock grazing.

2. Proximity of Water, Occupied Dwellings, Archaeological, Historical or Cultural Sites:

   a. The closest source of permanent water is Lake Sakakawea, which is located approximately 1.5 miles east of the proposed well location.

   b. XTO Energy, Inc. will be responsible for informing all persons associated with this project that they will be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects or site(s).

   c. If archaeological, historical or vertebrate fossil materials are discovered, XTO Energy, Inc. will suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations will not resume until written authorization to proceed is issued by the Authorized Officer.

Within five (5) working days the Authorized Officer will evaluate the discovery and inform XTO Energy, Inc. of actions that will be necessary to prevent loss of significant cultural or scientific values.

XTO Energy, Inc. will be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, XTO Energy, Inc. will be allowed to resume operations.

3. Additional Requirements for Operations on Surface Estate Administered by the Bureau of Indian Affairs:

    a. XTO Energy, Inc. will be responsible for weed control on disturbed areas within the exterior limits of this permit and will consult with the Authorized Officer, Bureau of Indian Affairs and/or local authorities for acceptable weed control measures.

Lessee's or Operator's Representative and Certification

FBIR Grinnell 41X-1
NENE (Lot 1), Sec. 1-T148N-R92W
Dunn County, North Dakota
Lease No. 7420A49475

OPERATOR

XTO Energy, Inc.
7114 W. Jefferson Ave., Suite 305
Denver, Colorado 80235
303.969.8280

OPERATOR'S REPRESENTATIVES

Permit Matters: J. Michael Warren (303.963.8243)
Drilling Matters: Ross Lubbers (405-319-3285)
Completion Matters: Doug McCrady (303.969.8280)
On-Site Meeting Representative: Kal Beckman (406.482.4000)

CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 7th day of February, 20 11.

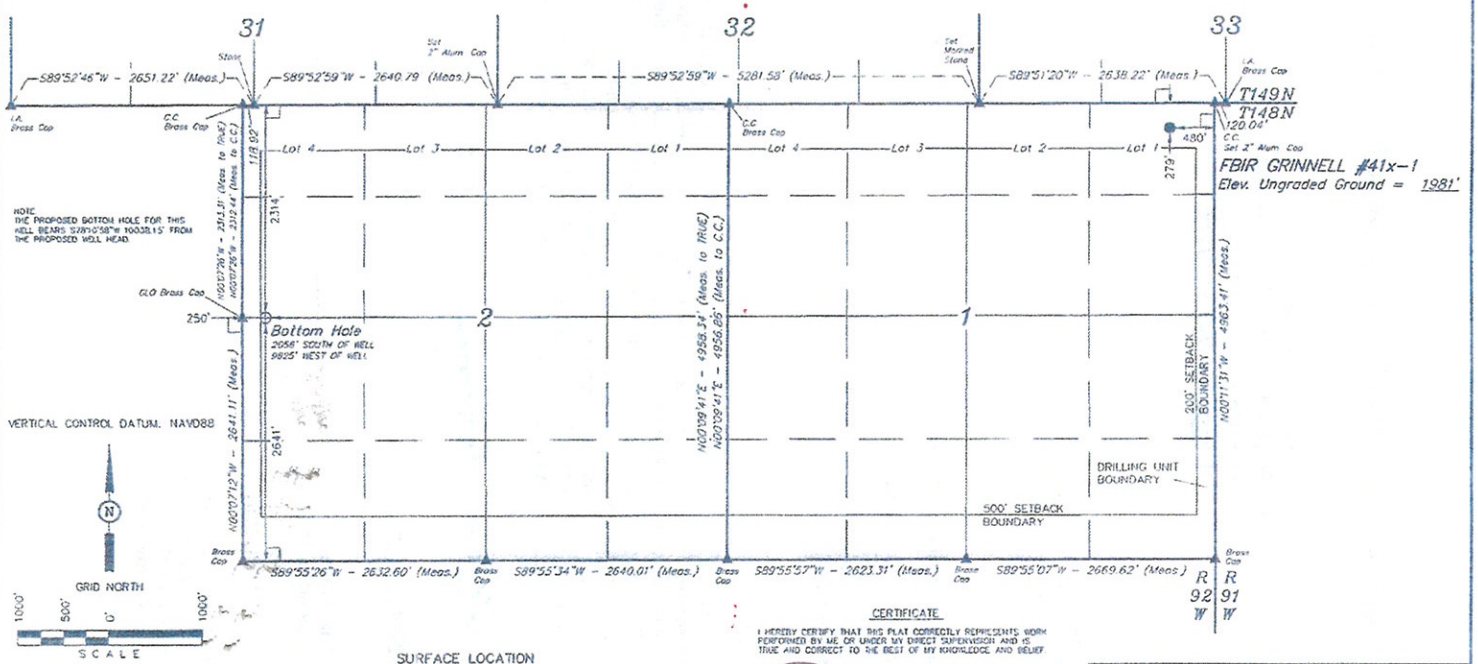
Name: J. Michael Warren
Position Title: Regulatory Coordinator
Telephone: 303-963-8243
mike_warren@xtoenergy.com

Field Representative: Kal Beckman
Address: P. O. Box 1589, Sidney, MT 59270
Phone: 406-482-4000 Ext. 107
kal_beckman@xtoenergy.com

WELL LOCATION PLAT
T148N, R92W, 5th P.M.

XTO ENERGY, INC.

Well location, FBIR GRINNELL #41x-1, located as shown in LOT 1 of Section 1, T148N, R92W, 5th P.M., Dunn County, North Dakota.



LEGEND:

- ⌞ = 90° SYMBOL
- ● = PROPOSED WELL HEAD
- ▲ = SECTION CORNERS LOCATED.

SURFACE LOCATION

(NAD 83)
LATITUDE = 47°40'24.08" (47.673356)
LONGITUDE = 102°20'05.14" (102.334761)
(NAD 27)
LATITUDE = 47°40'24.05" (47.673347)
LONGITUDE = 102°20'03.50" (102.334306)
(derived from: N.G.S. O.P.U.S. Solution REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000))

CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

TROY JENSEN REGISTERED LAND SURVEYOR 4654 NORTH DAKOTA

REGISTERED LAND SURVEYOR
REGISTRATION NO. 4654
STATE OF NORTH DAKOTA

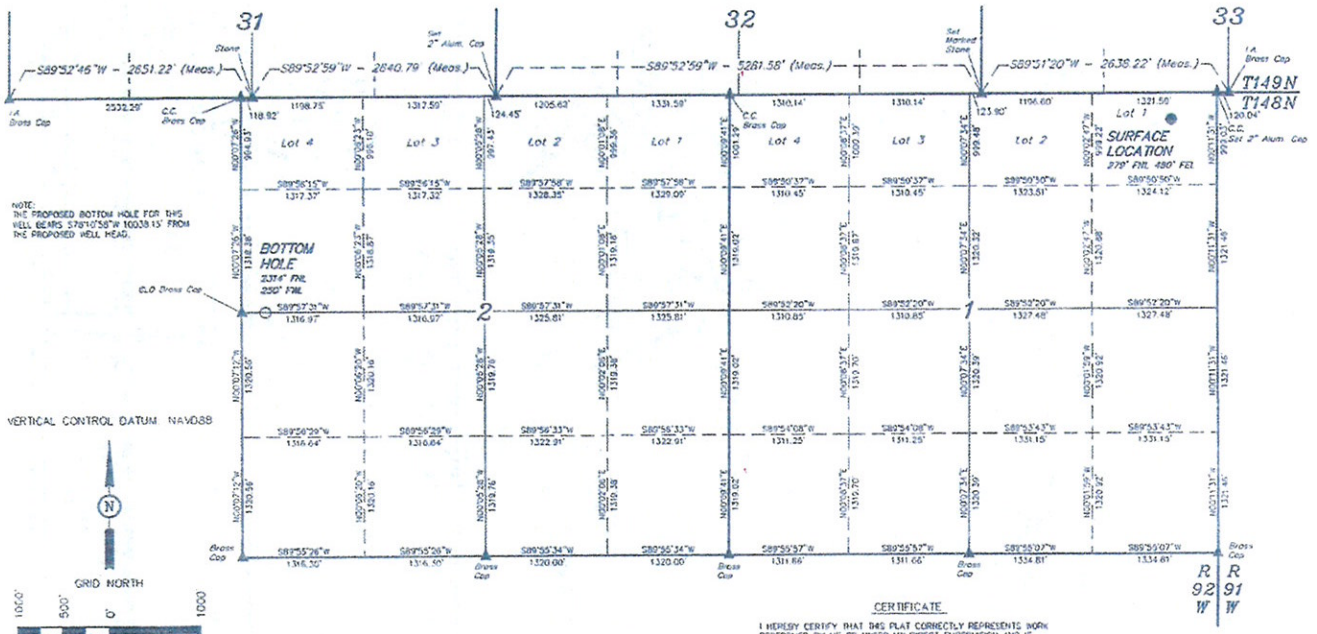
UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(435) 789-1017

SCALE: 1" = 1000'	DATE SURVEYED: 07-13-10	DATE DRAWN: 08-08-10
PARTY: G.R. D.Z. P.M.	REFERENCES: G.L.O. PLAT	
WEATHER: HOT	FILE: XTO ENERGY, INC.	

SECTION BREAKDOWN
T148N, R92W, 5th P.M.

XTO ENERGY, INC.

Well location, FBIR GRINNELL #41x-1, located as shown in LOT 1 of Section 1, T148N, R92W, 5th P.M., Dunn County, North Dakota.



LEGEND:

- = 90° SYMBOL
- ● = PROPOSED WELL HEAD
- ▲ = SECTION CORNERS LOCATED

SURFACE LOCATION

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LATITUDE = 47°40'24.08" (47.673356)
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LONGITUDE = 102°20'03.50" (102.334308)
[derived from: R.G.S. O.P.U.S. Solution REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000)]

CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

TROY JENSEN REGISTERED LAND SURVEYOR No. 4654 NORTH DAKOTA

REGISTERED LAND SURVEYOR
REGISTRATION NO. 4654
STATE OF NORTH DAKOTA

UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(435) 789-1017

SCALE: 1" = 1000'	DATE SURVEYED: 07-13-10	DATE DRAWN: 08-08-10
PARTY: G.R. D.Z. P.M.	REFERENCES: G.L.O. PLAT	
WEATHER: HOT	FILE: XTO ENERGY, INC.	

LEGEND:

PROPOSED LOCATION

N

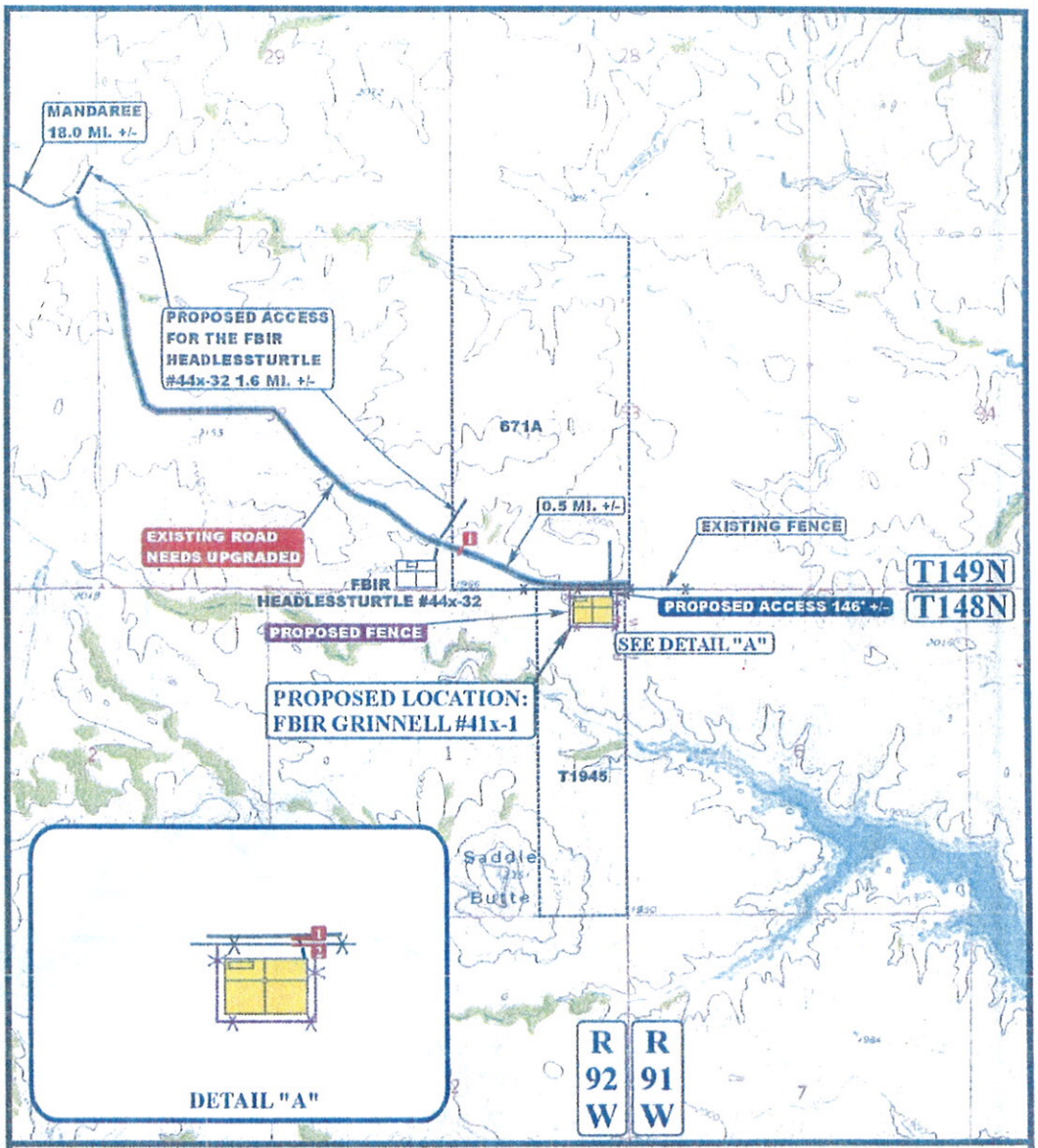
XTO ENERGY, INC.

FBIR GRINNELL #41x-1
SECTION 1, T148N, R92W, 5th P.M.
279' FNL 480' FEL

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

TOPOGRAPHIC MAP | 06 MONTH | 29 DAY | 10 YEAR | A TOPO

SCALE: 1:100,000 | DRAWN BY: J.L.G. | REV: 07-30-10 J.L.



LEGEND:

EXISTING ROAD
PROPOSED ACCESS ROAD
EXISTING FENCE
PROPOSED FENCE
1 18" CMP REQUIRED 2 INSTALL CATTLEGUARD

N

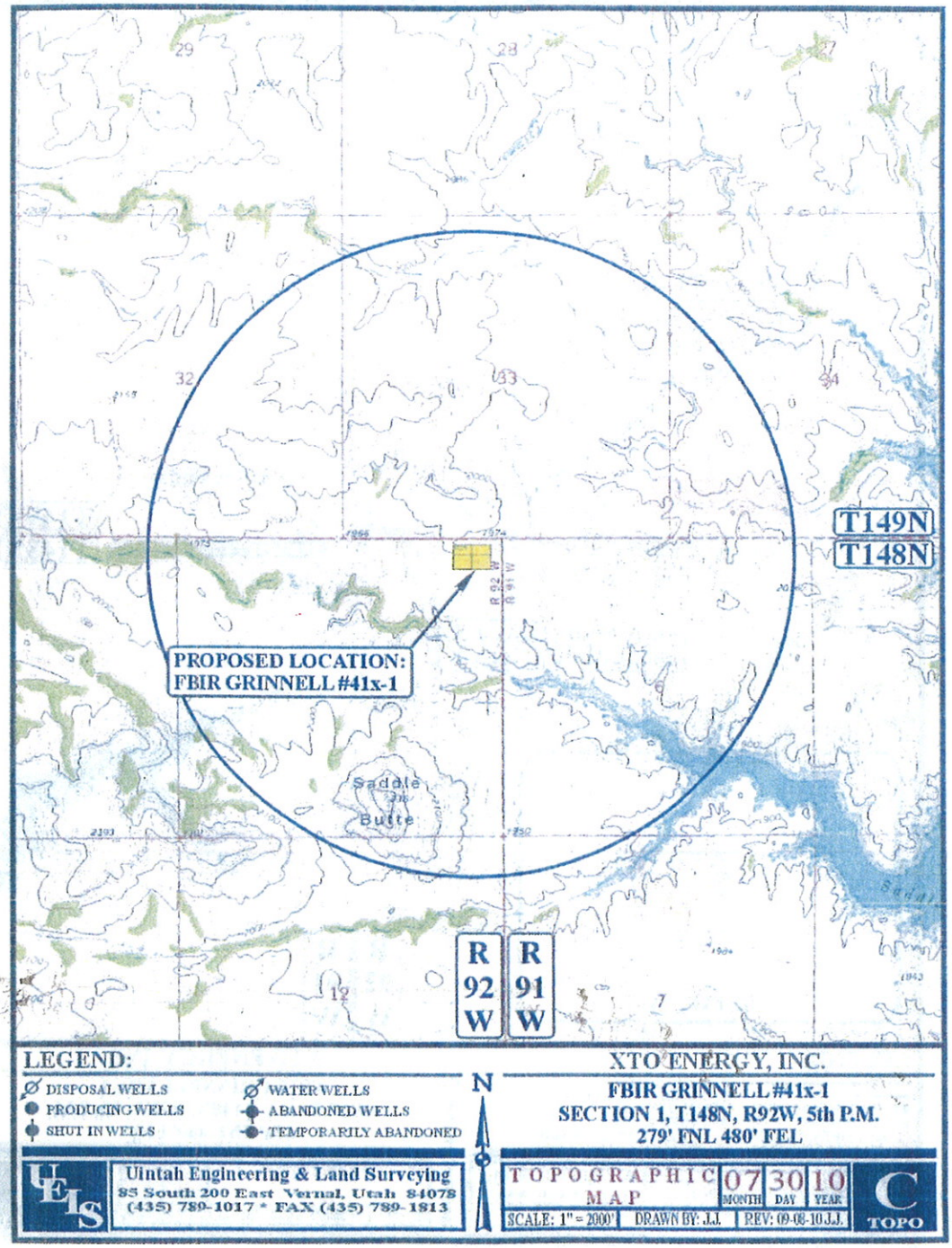
XTO ENERGY, INC.

FBIR GRINNELL #41x-1
SECTION 1, T148N, R92W, 5th P.M.
279' FNL 480' FEL

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

ACCESS ROAD MAP | 06 MONTH | 29 DAY | 10 YEAR | B TOPO

SCALE: 1" = 2000' | DRAWN BY: J.L.G. | REV: 09-08-10 J.L.



LEGEND:

- DISPOSAL WELLS
- PRODUCING WELLS
- SHUT IN WELLS
- WATER WELLS
- ABANDONED WELLS
- TEMPORARILY ABANDONED

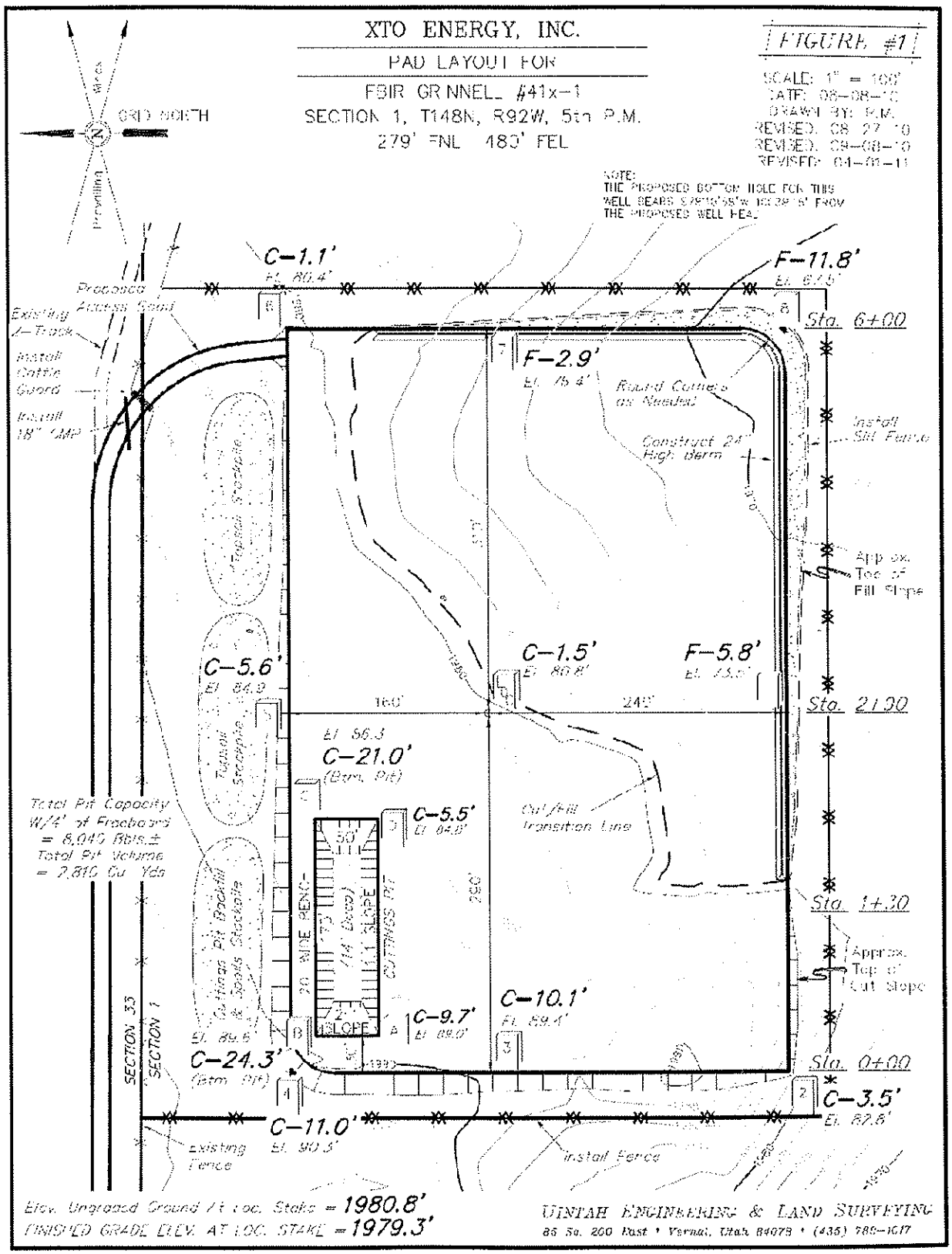
XTO ENERGY, INC.

FBIR GRINNELL #41x-1
SECTION 1, T148N, R92W, 5th P.M.
279' FNL 480' FEL

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

TOPOGRAPHIC MAP | 07 MONTH | 30 DAY | 10 YEAR | C TOPO

SCALE: 1" = 2000' | DRAWN BY: J.J. | REV: 09-08-10 J.J.


XTO ENERGY, INC.
PAD LAYOUT FOR
FBIR GRINNELL #41x-1
SECTION 1, T148N, R92W, 5th P.M.
279' FNL 480' FEL
FIGURE #1
SCALE: 1" = 100'
DATE: 08-08-10
DRAWN BY: P.M.
REVISED: 08-27-10
REVISED: 09-08-10
REVISED: 04-01-11
GRID NORTH
Proposed Access Road
Existing 2-Track
Install Cattle Guard
Install 18" CMP
C-1.1'
El. 80.4'
F-11.8'
Sta. 6+00
F-2.9'
Round Corners as Needed
Construct 24" High Berm
Install Silt Fence
Approx. Top of Fill Slope
C-5.6'
El. 84.9
C-1.5'
El. 80.8'
F-5.8'
160'
240'
Sta. 2+90
El. 86.3
C-21.0'
(Btm. Pit)
Total Pit Capacity W/4' of Freeboard = 8,040 Bbls.± Total Pit Volume = 2,810 Cu. Yds
C-5.5'
El. 84.8'
Cut/Fill Transition Line
Sta. 1+30
Approx. Top of Cut Slope
C-10.1'
El. 89.4'
C-9.7'
El. 89.0'
C-24.3'
(Btm. Pit)
Sta. 0+00
C-3.5'
El. 82.8'
C-11.0'
El. 90.3'
Existing Fence
Install Fence
SECTION 33
SECTION 1
Elev. Ungraded Ground At Loc. Stake = 1980.8'
FINISHED GRADE ELEV. AT LOC. STAKE = 1979.3'
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XTO ENERGY, INC.

FIGURE #2

TYPICAL CROSS SECTION FOR

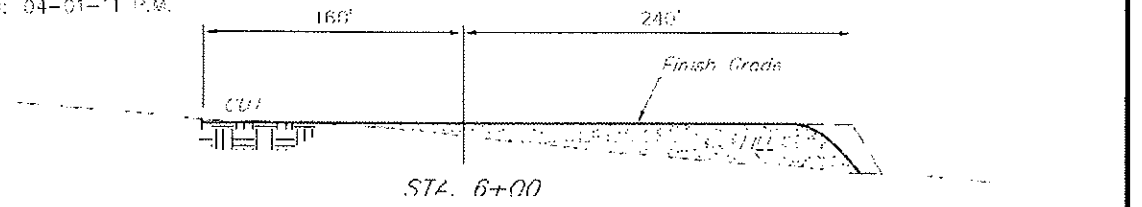
FBIR GRINNELL #41x-1

SECTION 1, T48N, R92W, 5th P.M.

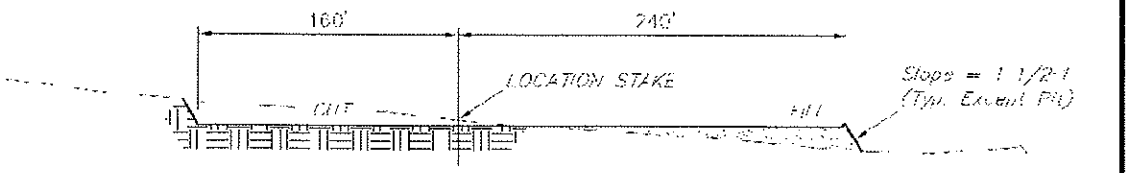
279' FNL 480' FEL

40'
X-Section
Scale
1" = 100'

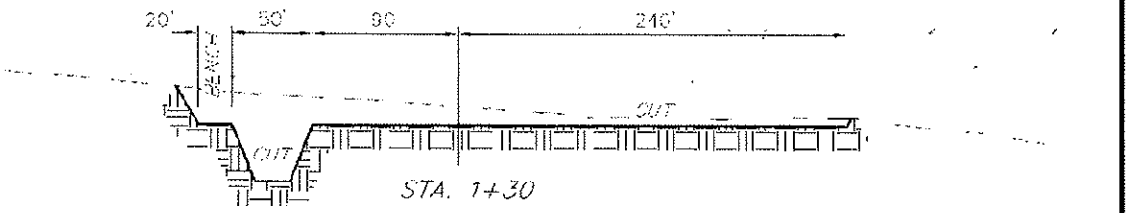
DATE: 08-08-10
DRAWN BY: P.M.
REVISED: 09-08-10 D.F.
REVISED: 04-01-11 P.M.



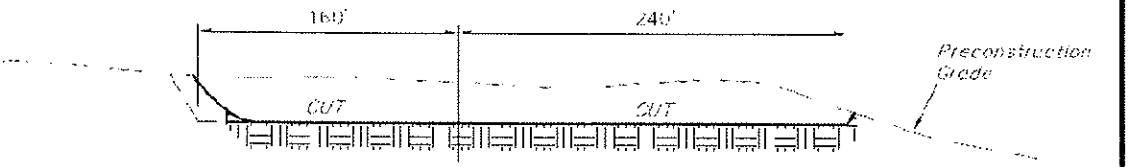
STA. 6+00



STA. 2+90



STA. 1+30



STA. 0+00

APPROXIMATE ACREAGES

WELL SITE DISTURBANCE = ± 6.574 ACRES
ACCESS ROAD DISTURBANCE = ± 4.356 ACRES
TOTAL = ± 10.930 ACRES

* NOTE:
FILL QUANTITY INCLUDES
5% FOR COMPACTION

APPROXIMATE YARDAGES

(6") Topsoil Stripping	=	4,310 Cu. Yds.
Remaining Location	=	22,220 Cu. Yds.
Cuttings Pit Cut	=	2,610 Cu. Yds.
TOTAL CUT	=	29,940 CU.YDS.
FILL	=	23,620 CU.YDS.

EXCESS MATERIAL	=	6,320 Cu. Yds.
Topsoil & Pit Backfill (1/2 Pit Vol)	=	6,320 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	=	0 Cu. Yds.

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86 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

XTO ENERGY, INC.

PRODUCTION FACILITY LAYOUT FOR

FBIR GRINNELL #41x-1
SECTION 1, T148N, R92W, 5th P.M.
279' FNL 480' FEL

FIGURE #3

SCALE: 1" = 100'
DATE: 08-08-10
DRAWN BY: P.M.
REVISED: 08-27-10
REVISED: 09-08-10 D.P.
REVISED: 11-02-10 D.P.

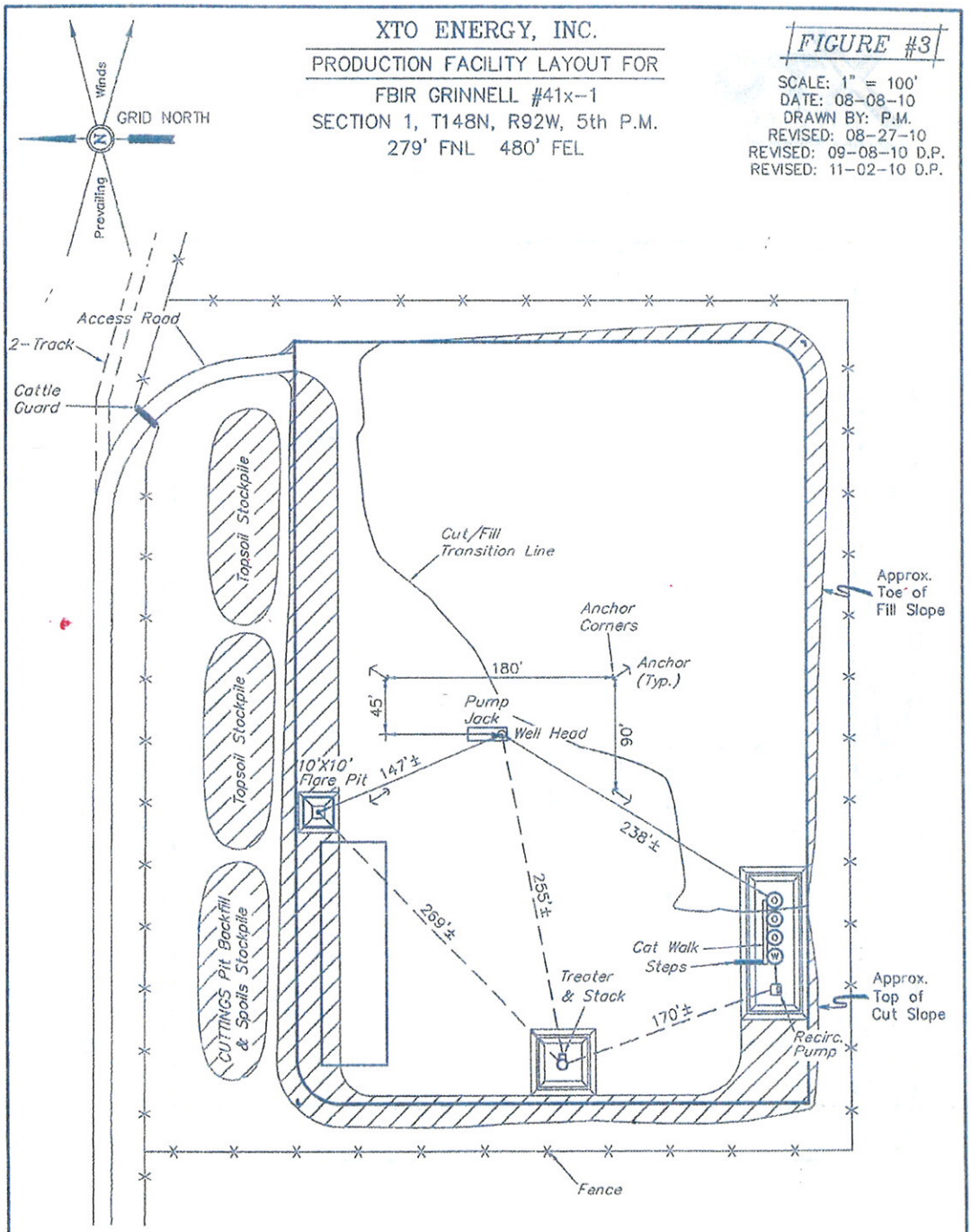

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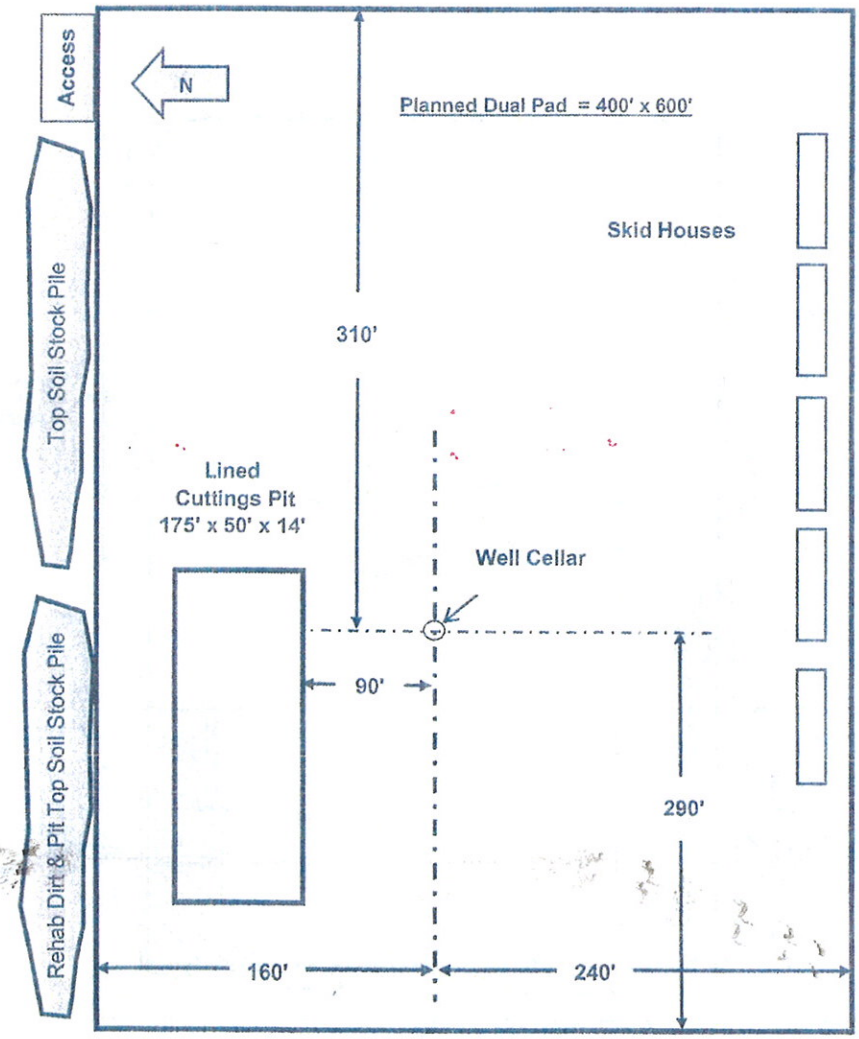
FIGURE #4

XTO ENERGY

Location Schematic

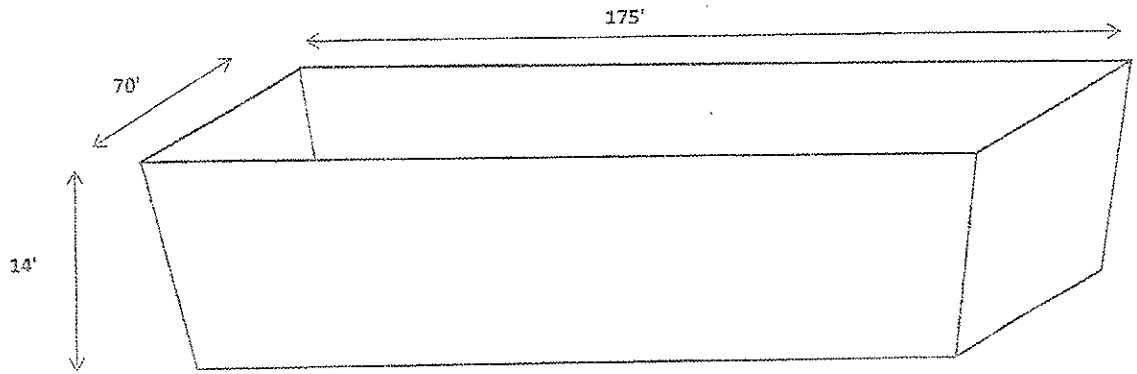
FBIR Grinnell 41X-1
Location: NE NE Sec 1, 148N, 92W
Footage: 279 ft FNL, 480 ft FEL
Elev: Graded Pad 1979', KB 2002'
Dunn County, ND

(not to scale)



XTO Energy, Inc.
CUTTINGS PIT LAYOUT

FBIR Grinnell 41X-1
Location: NE NE Sec 1, 148N, 92W
Footage: 279 ft FNL, 480 ft FEL
Elev: Graded Pad 1979', KB 2002'
Dunn County, ND



TOTAL PIT VOLUME WITH 4' FREEBOARD
8,040 BBL
2,810 CU YDS

Figure #5

Figure # 6

LORTEX 12 MIL LINER

Woven Reinforced High Density Polyethylene Fabric Coated With Low Density Polyethylene

PHYSICAL PROPERTIES AND SPECIFICATIONS

CONSTRUCTION:	12xD6 count per square inch Warp 950 Denier @ 50 Fill 1900 Denier @ 100
FABRIC GRADE:	Industrial, Carbon Black
STANDARD COATING COLORS:	Black
STANDARD COATING THICKNESS:	12 Mils +/- .15 mil each side LDRE
TOTAL THICKNESS:	12 Mils +/- .5 mil
NOMINAL WEIGHT:	5.3 oz/ square yard
NOMINAL TENSILE STRENGTH:	160 lbs W x 140 lbs Fill ASTM 1682-64 (Grab)
TEAR STRENGTH:	46 lbs W x 49 lbs Fill ASTM 2261-71 (Tongue)
MULLEN BURST STRENGTH:	325 psi ASTM D751-73
HYDROSTATIC RESISTANCE:	125 psi ASTM D1682-63
FLEX ABRASION:	5000+ cycles W 5000+ cycles Fill ASTM D1175-71
PUNCTURE RESISTANCE:	40 pounds FTMS 101B method 2065
IDENTIFICATION:	Printed in white ink "12 Mil" on 36 inch repeat

XTO ENERGY, INC.

FBIR GRINNELL #41x-1

LOCATED IN DUNN COUNTY, NORTH DAKOTA
SECTION 1, T148N, R92W, 5th P.M.

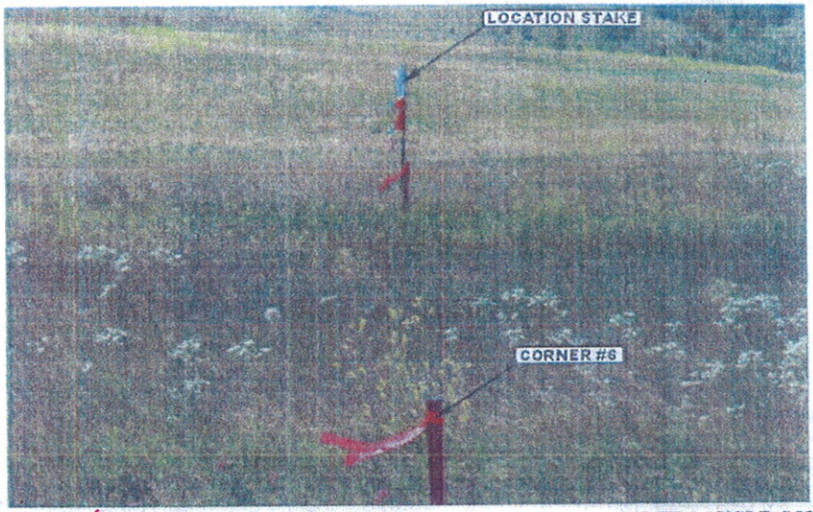


PHOTO: VIEW FROM CORNER #6 TO LOCATION STAKE

CAMERA ANGLE: SOUTHERLY

PHOTO: VIEW FROM BEGINNING OF PROPOSED ACCESS FOR FBIR HEADLESSTURTLE #44x-32

CAMERA ANGLE: EASTERLY

Since 1964

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

LOCATION PHOTOS	07 MONTH	30 DAY	10 YEAR	PHOTO
TAKEN BY: D.Z.	DRAWN BY: J.J.	REVISED: 00-00-00		

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
7420A49317

6. If Indian, Allotee or Tribe Name
Three Affilliated Tribes

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
FBIR Grinnell 34X-33

2. Name of Operator XTO Energy, Inc.

9. API Well No.
33-025-01302

3a. Address 7114 W. Jefferson Ave., Suite 305
Denver, CO 80235

3b. Phone No. *(include area code)*
303.969.8280

10. Field and Pool, or Exploratory
Heart Butte - Bakken

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 291' FSL & 2226' FEL, SWSE Sec. 33-149N-91W
At proposed prod. zone 732' FSL & 2246' FEL, SWSE Sec. 33-149N-91W

11. Sec., T. R. M. or Blk. and Survey or Area
33-149N-91W

14. Distance in miles and direction from nearest town or post office*

12. County or Parish
Dunn

13. State
ND

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any)
291'

16. No. of acres in lease
1280 Ac. Spacing Unit

17. Spacing Unit dedicated to this well
All of Sec. 28 & 33-149N-91W

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
n/a

19. Proposed Depth
19,860' MD
9,984' TVD

20. BLM/BIA Bond No. on file
UTB000138

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
1966' GL; 1989' KB

22. Approximate date work will start*
07/01/2011

23. Estimated duration
45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature

Name *(Printed/Typed)*
J. Michael Warren

Date
02/07/2011

Title
Regulatory Supervisor

Approved by *(Signature)*

Name *(Printed/Typed)*

Date

Title

Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

PO Box 1589, Sidney, MT 59270

Drilling Plan - **Drill, Complete & Equip Single Lateral Wellbore in the Bakken**

Well Name and Location

FBIR Grinnell 34X-33

Location: SW SE Sec 33, 149N-91W
Footage: 291 ft FSL, 2226 ft FEL
Elev: Graded Pad 1966', KB 1989'
Dunn County, ND

Latitude	**47.674917**	**North**
Longitude	**102.330647**	**West**

Driving Directions

From Mandaree, ND: 15.3 mi E on BIA 12, 2.3 mi NE on BIA 13, 0.4 mi E on existing rd, 1.6 mi SE on proposed access rd to FBIR Headless Turtle 44X-32, 0.5 mi E on proposed access rd to FBIR Grinnell 41X-1, then 0.1 mi NE into loc'n

Drilling Rig Description

Rig	Nabors 109
Draw Works	Commander 650 A/C - 1,150 hp motor
Mast	DSI 136' Cantilever mast (550,000# - 12 lines)
Prime Movers	3 - Caterpillar 3512C - Kato 1100 KW gens
Pumps	2 - GD PZ-10 (independently driven)
BOPE	T3 6012 Type U 13-5/8" 5,000 psi single & dbl gate BOPs Hydril GX 13-5/8" 5,000 psi Annular BOP 4" x 5M-psi choke manifold

Formation Tops	**TVD**	*Offset XTO Wells - none (yet)*
Base of Fox Hills	1,679	
Greenhorn	3,955	
Dakota Silt	4,675	Brackish Water
Dunham Salt	**5,845**	**(0 - 20 ft)**
Spearfish	6,155	
Pine / Opeche Salts	**6,329**	**(100 - 150 ft)**
Minnekahta	6,465	
Minnelusa	6,774	soft/hard formation
Tyler	7,260	laminations can wipe
Kibbey Lime	7,705	out bit if drilled too aggressively
Charles	**7,864**	
Base Last Salt	**8,361**	
Mission Canyon	8,539	Possible losses
Lodgepole	9,140	
Upper Bakken Shale	9,977	
Middle Bakken	9,995	
Target - Bakken	**10,007**	

Logging, DST and Coring Program

1. A mud log will be run from Base of Last Salt to TD & on all laterals: Mudlog to include: total gas chromatograph and sample cuttings - 10' sample intervals in vertical hole & 30' intervals in laterals. A CBL/GR log will be run from deepest free-fall depth in 7 inch casing to surface. An MWD GR/ROP log will also be run from KOP (where the CBL will tie into) to TD of lateral.
2. *Open hole logs are anticipated for this well (if drilled before FBIR Grinnell 41X-1)*
3. No DST's are planned at this time.

H2S

A minor H2S show may be present from below Base Last Salt to KOP. If noticed, RU H2S safety trailer etc.

Maximum Formation Pressure and Temp

1. Normal formation pressure gradient is expected (up to 0.5 psi/ft or 9.6 ppg) from surface to the Bakken Shale. The Bakken Shale, Bakken Middle Member, and Three Forks may be over pressured up as much as 0.66 psi/ft (12.8 ppg).
2. The maximum anticipated BHT is **250** degrees F. or less.

BOP Equipment Requirements

See attached diagram detailing BOPE specifications.

1. Rig will be equipped with upper and lower kelly cocks with handles available.
2. Inside BOP and TIW valves will be available to use on all sizes and threads of DP used on well.
3. BOP accumulator will have enough capacity to close HCR valve, close all rams plus annular preventer & retain minimum of 200 psi above precharge on the closing manifold without the use of closing pumps. The fluid reservoir capacity shall be at least double the usable fluid volume of the accumulator system capacity & the fluid level shall be mainatained at manufacturer's recommendation. There will be 2 additional sources of power for the closing pumps (electric and air). Sufficient N2 bottles will be available and will be recharged when pressure falls below manufacturer's minimum

4. BOP ram preventers will be tested to 5,000 psi using a test plug when initially installed and after 7 inch casing is nippled up and at 30 day intervals. Test BOP & casing strings to 1,500 psi just prior to drilling out 9-5/8" and 7" casing shoes. Function test rams and hydraulically operated remote choke line valve daily (preferably at every crew change).
5. Remote valve for BOP rams, HCR & choke shall be placed in a location that is readily available to Driller. The remote BOP valve shall be capable of closing and opening the rams.
6. Hand wheels on BOP shall be equipped with locking devices. A locking device shall be placed on annular preventer line valve & must be locked in the open position. This lock shall only be removed when the closing unit is inoperative.

Drilling Fluid and Related Equipment

1. Pumps shall be equipped with stroke counters with displays located in dog house. Slow pump speed shall be recorded on drilling report daily after mudding up.
2. A Pit Volume Totalizer will be installed and the readout will be displayed in the dog house.
3. Gas detecting equipment (for a chromatagraph) will be installed at shaker. Readouts will be available in dog house and in geologist trailer.
4. In the event gas flow becomes an issue. A flare pit shall be constructed not less than 100' from wellhead & 50' from cuttings handling area. Lines to the flare pit will be straight runs (staked down) and turns will utilize targeted tees. Flare pit will be located down wind as much as possible. An electronic ignitor will be used along with a propane line to provide for a continuous flare pilot.

Drilling Plan

Section 1 - Surface Casing>> **Surface to: 1,820** ***(Surface Casing Depth + 20')***

Conductor:	16" set at 45' - 80' (depending on gravel or coal depths)
Hole Size:	13-1/2"
Mud:	Fresh Water
Bits:	Type 1 mill tooth
Procedure:	Set 16" conductor pipe into firm clay (45'-80'). Drill to casing setting depth (plus necessary rathole). *After reaching TD, run gyro directional survey (inclination and azimuth at 100' stations).* Run casing and cement. Weld on C22 5M psi casing head. NU 11" x 5M psi drilling spool. NU 5M psi BOPE. Test to 5,000 psi.
Casing:	9-5/8" 36# K-55 8rd ST&C R3 SMLS - New. **Set at: 1,800 ft**
Centralizers:	2 turbolizers per jt on 1st **3** jts (stop banded 10' from each collar) & 1 regular centralizer per **5** jts to surface.
Cement:	Lead Slurry: **330 Sacks** 50:50 Poz:Class C w/ defoamer, water loss & 1/8 #/sk polyflake. Mixed at 17.83 gps wtr, 2.93 cf/sk yield & 11.5 ppg. Tail Slurry: **200 Sacks** Class C with 3% salt & 1/8 #/sk polyflake. Mixed at 7.37 gps wtr, 1.48 cf/sk yield and 14.2 ppg. ***Note:** Volumes calculated assuming **35%** excess over 13-1/2" hole size.*

Section 2 - Surf Csg Shoe to KOP>> **1,800 to: 9,598**

Hole Size:	8-3/4"
Mud	Invert - 80% Diesel / 20% Salt Water. Mud Weight 9.5 - 9.7 PPG. ES 500-600.
Bits	PDC bits with mud motors and MWD. Avoid RPM's at bit > 230 in fast hole section. *Recommend drilling out with Smith MDSi616BPX jetted with 12's and drilling to top of Charles (or when ROP becomes unbearable). Then recommend Hughes Q506FX (Part No. X14533R or X13904) as the 2nd bit, jetted with 13's.*
Procedure:	Drill w / PDC bit & mud motor. Steer as needed with MWD or SWD. Survey every 90'. Hold deviation to 2 deg max from surf csg shoe to ~6,000'; then ~3 deg max to ~8,000'; then ~4 deg max to KOP. Condition hole for logs (if needed). TOH
Logs:	Mudlogger will start at Base of Last Salt.
if 1st well drilled on pad	**GR, Resistivity, BHC Sonic — From TD To Surf Csg** **Density - Neutron Porosity — From TD To 50' above Tyler**

Section 3 - Drill Curve (14 Degree/100')>> **9,598 to: 10,293 7" Casing Point**

Hole Size:	8-3/4"
Mud:	Invert - 80% Diesel / 20% Salt Water. Mud weight 9.5 - 9.7 PPG. ES 500-600.
Bits:	*Type 2 PDC (Halliburton FXD55M or Reed MSF613DC2A) jetted with 18's. Preferred motor is a Wenzel 2.38 deg. fixed bend, 5/6 lobe, 5 stage, 0.35 rev/gal motor equipped with short (+/- 5') bit-to-bend*
Procedure:	Drill Curve per directional plan (maximum survey interval is 30').
Casing:	Set 7" 29# P-110 & MS-110 LT&C and 32# P-110 (100' above & below salts) at **10,273 ft**

Anticipated Casing Design to facilitate fracture stimulating down casing

Top	Btm	Ftg		
0	5,745	5,745	7" 29# P-110 LT&C	Surf to 120' above Dunham salt
5,745	6,874	1,129	7" 32# P-110 LT&C	120' above Dunham to 120' below base of Pine/Opeche salts
6,874	7,764	890	7" 29# P-110 LT&C	120' below base of Pine/Opeche to 120' above Charles salt
7,764	8,461	697	7" 32# P-110 LT&C	120' above Charles salt to 120' below Base of Last Salt
8,461	9,698	1,237	7" 29# MS-110 LT&C	120' below Base of Last Salt 100' below KOP
9,698	10,273	575	7" 29# P-110 LT&C	100' below KOP to TD

Centralizers:	2 stand-off bands per jt on btm **3** jts (banded 10' from collars). 1 stand-off band on every other jt from curve landing depth through KOP. 1 turbolizer centralizer per jt from 100' above to 100' below each salt section. Then, 1 regular centralizer per **6** jts up to anticipated cement top.
Cement:	**Lead** Slurry: **156 Sacks** *(est. TOC ~ 300' above Mowry)* High-early strength 50:50 Pozmix with defoamer, fluid loss additive, dispersant, 0.2% thixotropic additive & 1/8 #/sk polyflakes. Mixed at 14.45 gps, 2.51 cf/sk, 11.8 ppg

1st Tail Slurry: 552 Sacks *(est TOC 200' above Dunham Salt)*

50:50 Pozmix with defoamer, fluid loss additive, 0.25% retarder, 0.2% thixotropic additive, 1.6#/sk polyflakes. Mixed at 6.38 gal/sk, 1.39 cf/sk, 14.2 ppg.

2nd Tail Slurry: 294 Sacks *(est TOC 100' below the Mission Canyon)*

Class G with expanding agent, friction reducer, fluid loss additive, 35% silica flour, 0.2% retarder, 1.6 #/sk polyflakes. Mixed at 6.49 gal/sk, 1.57 cf/sk, 15.8 ppg.

NOTE: Slurry volumes are based on 9" hole + 50% excess (≈ 8.75" hole + 75% excess)

Logs: MWD GR/ROP. Mud log.

Section 4 - Lateral #1>> **10,273 to: 19,883** *TD (MD)*

Hole Size: 6"

Mud: Salt Water Mud. Typically 9.5-9.7 ppg using NaCL. If conditions warrant use CaCl brine (up to 11.2 ppg).

Bits: PDC bits.

Procedure: TIH w/bit and directional tools. Drill open hole lateral per directional plan to TD target. Max survey interval in lateral is 90'. TOH with DP & BHA. Run 4 1/2" 11.6# J-55 BT liner w/ pre-drilled, 0.5" holes per 2 ft below bottom-most external swell pkr, followed by 13.5# P-110 BT blank pipe with external swell packers (evenly spaced in open hole, unless natural fractures were encountered while drilling) from +/-TD to last swell packer in open hole. Run 4.5" 13.5# P-110 Tenaris-Blue casing above last swell packer in the open hole to +/- KOP, with a final swell packer located immediately below the liner hanger.

Once liner is run, circulate out oil & gas and spot FW in lateral to activate swell pkrs. Drop ball & wait +/- 1 hr for it to seat. Set liner hanger & top pkr - test to +/- 5,000 psi. PU & slack-off +/- 40 k-lbs over/under string weight to confirm liner hanger is set. Rotate off of liner hanger. Circulate bottoms-up. POH LD liner setting tools.

Liner: Top: 9,598 - *KOP* Btm: 19,883 *<-- spaced out as close to TD as possible*

Finalize Well >>>> Set wireline-set, tubing-retreivable bridge plug with BHP gauges & top blanking plug in 1st or 2nd joint of 4-1/2" liner below liner top. Run CBL. Displace vertical section of wellbore above plug with clean brine (the lower the MW, the better). LD DP. ND BOP & NU tree. RDMO.

Prepared By: Ross K. Lubbers - 01/28/11
Updated: - 03/08/11 - fix GL / KB elev error

XTO ENERGY

Well Construction Diagram

FBIR Grinnell 34X-33
Location: SW SE Sec 33, 149N-91W
Footage: 291 ft FSL, 2226 ft FEL
Elev: Graded Pad 1966', KB 1989'
Dunn County, ND

From Mandaree, ND: 15.3 mi E on BIA 12, 2.3 mi NE on BIA 13, 0.4 mi E on existing rd, 1.6 mi SE on proposed access rd to FBIR Headless Turtle 44X-32, 0.5 mi E on proposed access rd to FBIR Grinnell 41X-1, then 0.1 mi NE into loc'n

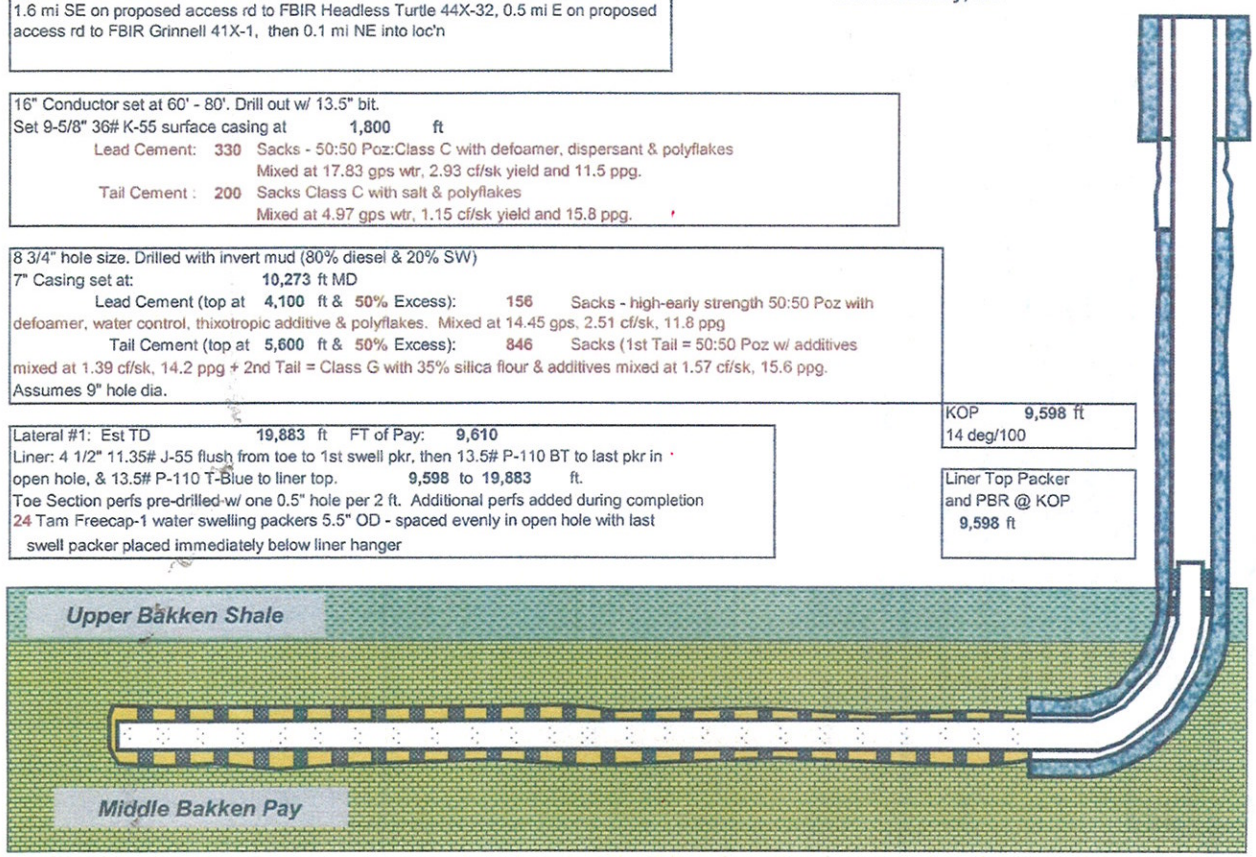
16" Conductor set at 60' - 80'. Drill out w/ 13.5" bit.
Set 9-5/8" 36# K-55 surface casing at **1,800** ft
Lead Cement: **330** Sacks - 50:50 Poz:Class C with defoamer, dispersant & polyflakes
Mixed at 17.83 gps wtr, 2.93 cf/sk yield and 11.5 ppg.
Tail Cement : **200** Sacks Class C with salt & polyflakes
Mixed at 4.97 gps wtr, 1.15 cf/sk yield and 15.8 ppg.

8 3/4" hole size. Drilled with invert mud (80% diesel & 20% SW)
7" Casing set at: **10,273** ft MD
Lead Cement (top at **4,100** ft & **50%** Excess): **156** Sacks - high-early strength 50:50 Poz with defoamer, water control, thixotropic additive & polyflakes. Mixed at 14.45 gps, 2.51 cf/sk, 11.8 ppg
Tail Cement (top at **5,600** ft & **50%** Excess): **846** Sacks (1st Tail = 50:50 Poz w/ additives mixed at 1.39 cf/sk, 14.2 ppg + 2nd Tail = Class G with 35% silica flour & additives mixed at 1.57 cf/sk, 15.6 ppg.
Assumes 9" hole dia.

Lateral #1: Est TD **19,883** ft FT of Pay: **9,610**
Liner: 4 1/2" 11.35# J-55 flush from toe to 1st swell pkr, then 13.5# P-110 BT to last pkr in open hole, & 13.5# P-110 T-Blue to liner top. **9,598** to **19,883** ft.
Toe Section perfs pre-drilled w/ one 0.5" hole per 2 ft. Additional perfs added during completion
24 Tam Freecap-1 water swelling packers 5.5" OD - spaced evenly in open hole with last swell packer placed immediately below liner hanger

KOP **9,598** ft
14 deg/100

Liner Top Packer and PBR @ KOP **9,598** ft



DIRECTIONAL DRILLING PLAN

FBIR Grinnell 34X-33

Location: SW SE Sec 33, 149N-91W

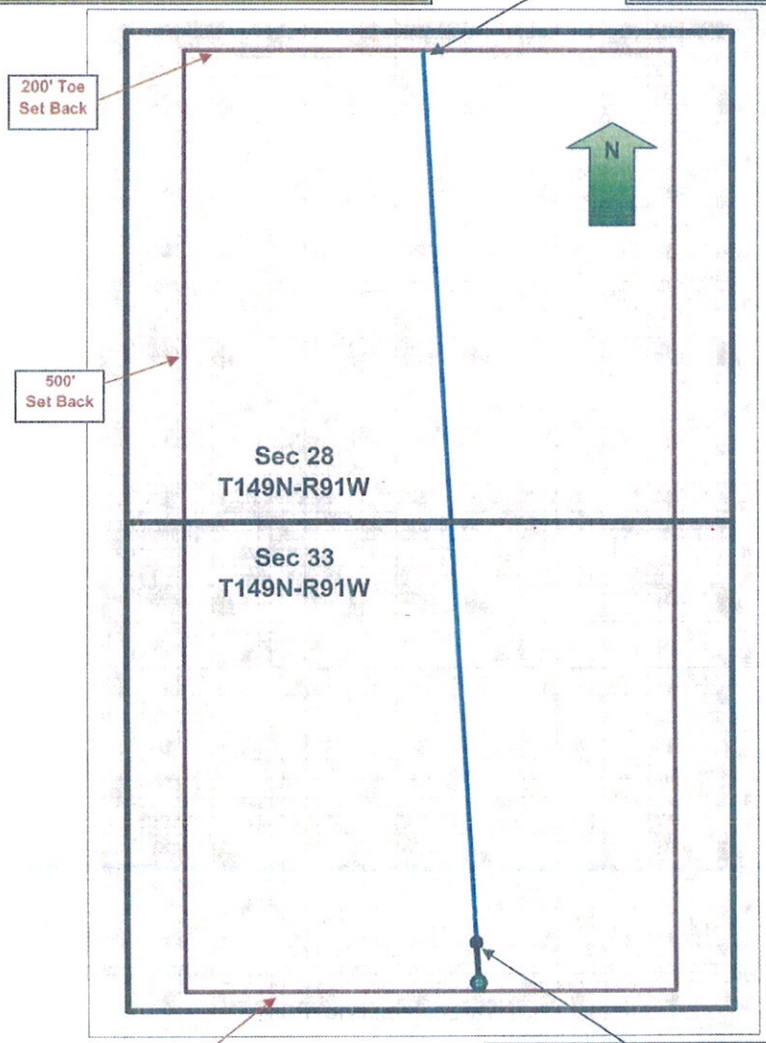
Footage: 291 ft FSL 2226 ft FEL

Elev: Graded Pad 1966', KB 1989'

Dunn County, ND

Scale: 1 sq = 100'

TARGET			
TMD:	19,883 ft		
TVD:	10,007 ft		
10,041	NOW	461	WOW
250	FNL	2,634	FEL
WH to BH Target Az			357.37

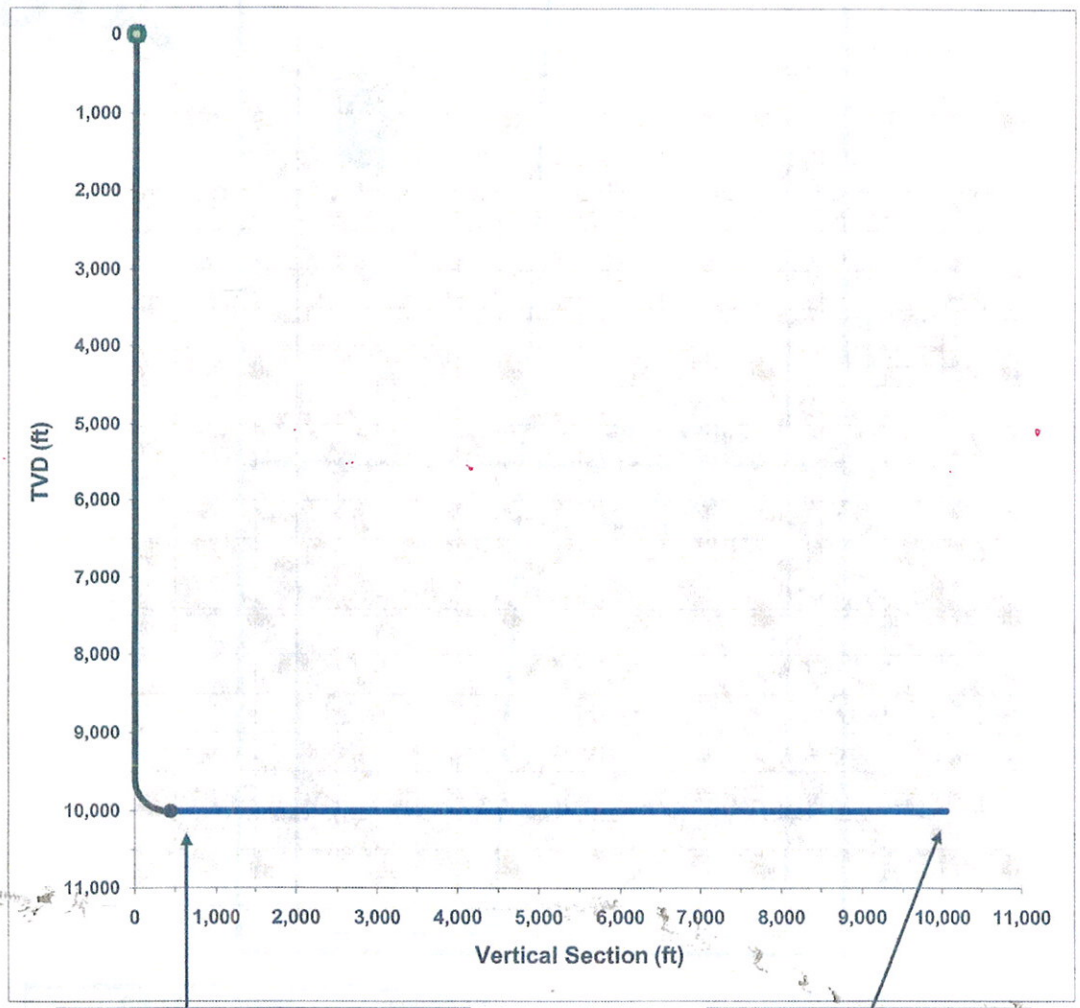


7" Casing:	10,273	FT MD	
BHL:	2,246 ft FEL	732 ft FSL	
Coord:	20 W	441 N	
Az to Shoe:	357.37	Deg	

DIRECTIONAL DRILLING PLAN
FBIR Grinnell 34X-33

Location:	SW SE Sec 33, 149N-91W
Footage:	291 ft FSL 2226 ft FEL
Elev:	Graded Pad 1966', KB 1989'
Dunn County, ND	
Scale: 1 sq = 500'	

XTO ENERGY



7" Casing:	10,273	FT MD
BHL: 2,246 ft FEL		732 ft FSL
Coord:	20 W	441 N
Az to Shoe:	357.37	Deg

TARGET

TMD:	19,883 ft		
TVD:	10,007 ft		
10,041	NOW	461	WOW
250	FNL	2,634	FEL
WH to BH Target Az		357.37	

HORIZONTAL DRILLING PLAN - LATERAL NO.1

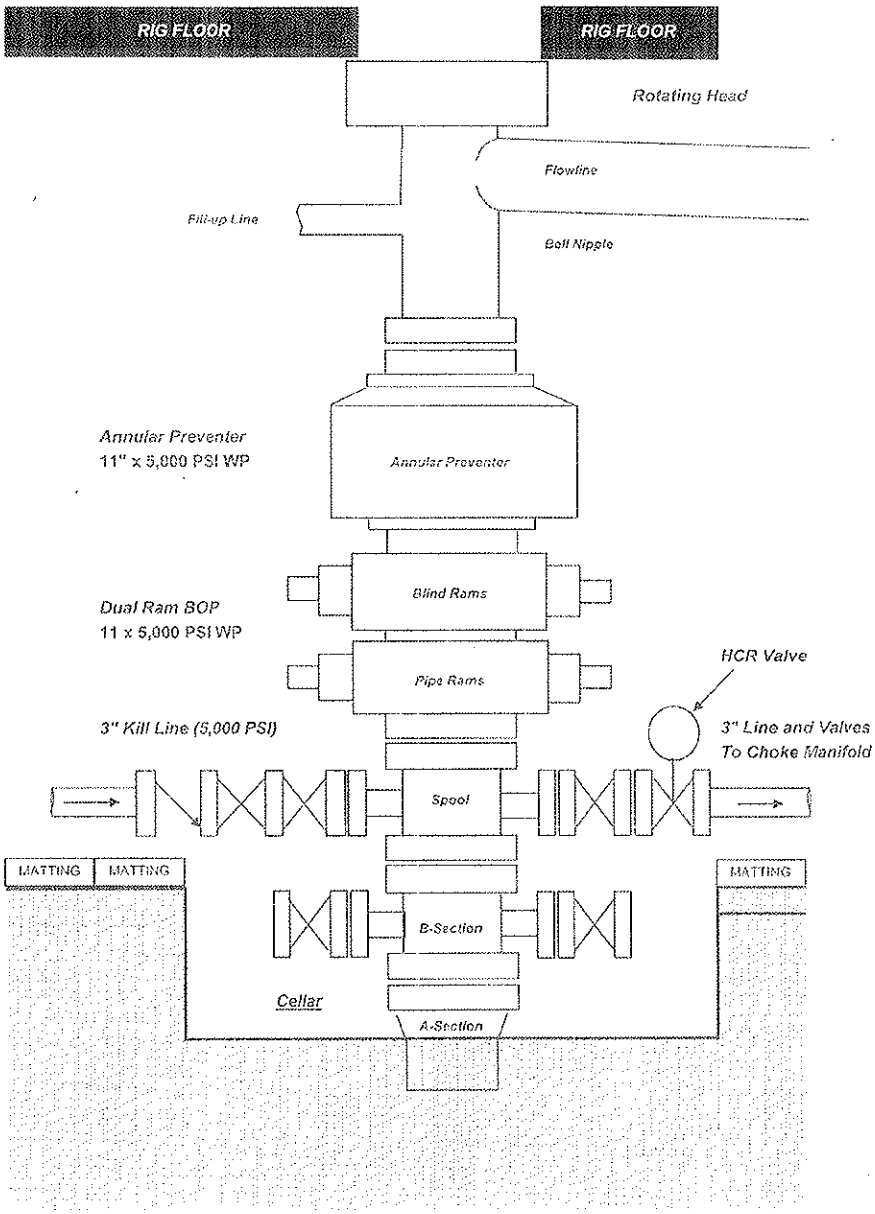
Company	XTO Energy, Inc		Target Inclination	90	
Well	FBIR Grinnell 34X-33		Magnetic Declination		
Build Rate	14.00		Target TVD	9,984	
Relative Turn Direction	R		Target Azimuth	357.37	357.37 Initial Azimuth
Turn Rate - Deg/100	4.00	0.00 Total Turn	Target Coordinates from Surf Locn	461 W	10041 N 10,052 VS

Date	No.	DEPTH	INC.	AZM	C.L.	T.V.D.	V.S.	N/S	E/W	DLS	B./D.	Walk	BRN
	1	0				0.00	0.00	0.00 N	0.00 E	0.00			0.00
KOP1	2	9,575	0.00	0.00	9575	9574.74	0.00	0.00 N	0.00 E	0.00	0.00	0.00	14.00
	3	9,588	1.80	357.37	12.9	9587.60	0.20	0.20 N	0.01 W	14.00	14.00	2779.55	14.00
	4	9,600	3.60	357.37	12.9	9600.44	0.81	0.81 N	0.04 W	14.00	14.00	0.00	14.00
	5	9,613	5.40	357.37	12.9	9613.26	1.82	1.81 N	0.08 W	14.00	14.00	0.00	14.00
	6	9,626	7.20	357.37	12.9	9626.04	3.23	3.22 N	0.15 W	14.00	14.00	0.00	14.00
	7	9,639	9.00	357.37	12.9	9638.77	5.04	5.03 N	0.23 W	14.00	14.00	0.00	14.00
	8	9,652	10.80	357.37	12.9	9651.43	7.25	7.24 N	0.33 W	14.00	14.00	0.00	14.00
	9	9,665	12.60	357.37	12.9	9664.02	9.86	9.85 N	0.45 W	14.00	14.00	0.00	14.00
	10	9,678	14.40	357.37	12.9	9676.52	12.86	12.84 N	0.59 W	14.00	14.00	0.00	14.00
	11	9,690	16.20	357.37	12.9	9688.92	16.25	16.23 N	0.75 W	14.00	14.00	0.00	14.00
	12	9,703	18.00	357.37	12.9	9701.21	20.03	20.01 N	0.92 W	14.00	14.00	0.00	14.00
	13	9,716	19.80	357.37	12.9	9713.37	24.19	24.17 N	1.11 W	14.00	14.00	0.00	14.00
	14	9,729	21.60	357.37	12.9	9725.40	28.74	28.71 N	1.32 W	14.00	14.00	0.00	14.00
	15	9,742	23.40	357.37	12.9	9737.28	33.66	33.62 N	1.54 W	14.00	14.00	0.00	14.00
	16	9,755	25.20	357.37	12.9	9749.00	38.95	38.91 N	1.79 W	14.00	14.00	0.00	14.00
	17	9,768	27.00	357.37	12.9	9760.54	44.61	44.56 N	2.05 W	14.00	14.00	0.00	14.00
	18	9,780	28.80	357.37	12.9	9771.90	50.62	50.57 N	2.32 W	14.00	14.00	0.00	14.00
	19	9,793	30.60	357.37	12.9	9783.07	56.99	56.93 N	2.61 W	14.00	14.00	0.00	14.00
	20	9,806	32.40	357.37	12.9	9794.03	63.71	63.64 N	2.92 W	14.00	14.00	0.00	14.00
	21	9,819	34.20	357.37	12.9	9804.78	70.77	70.69 N	3.25 W	14.00	14.00	0.00	14.00
	22	9,832	36.00	357.37	12.9	9815.30	78.16	78.08 N	3.58 W	14.00	14.00	0.00	14.00
	23	9,845	37.80	357.37	12.9	9825.58	85.88	85.79 N	3.94 W	14.00	14.00	0.00	14.00
	24	9,858	39.60	357.37	12.9	9835.61	93.92	93.82 N	4.31 W	14.00	14.00	0.00	14.00
	25	9,870	41.40	357.37	12.9	9845.39	102.27	102.16 N	4.69 W	14.00	14.00	0.00	14.00
	26	9,883	43.20	357.37	12.9	9854.90	110.92	110.80 N	5.09 W	14.00	14.00	0.00	14.00
	27	9,896	45.00	357.37	12.9	9864.13	119.87	119.74 N	5.50 W	14.00	14.00	0.00	14.00
	28	9,909	46.80	357.37	12.9	9873.08	129.10	128.97 N	5.92 W	14.00	14.00	0.00	14.00
	29	9,922	48.60	357.37	12.9	9881.73	138.61	138.46 N	6.36 W	14.00	14.00	0.00	14.00
	30	9,935	50.40	357.37	12.9	9890.08	148.39	148.23 N	6.81 W	14.00	14.00	0.00	14.00
	31	9,948	52.20	357.37	12.9	9898.12	158.42	158.25 N	7.27 W	14.00	14.00	0.00	14.00
	32	9,960	54.00	357.37	12.9	9905.84	168.70	168.52 N	7.74 W	14.00	14.00	0.00	14.00
	33	9,973	55.80	357.37	12.9	9913.23	179.22	179.03 N	8.22 W	14.00	14.00	0.00	14.00
	34	9,986	57.60	357.37	12.9	9920.29	189.97	189.77 N	8.71 W	14.00	14.00	0.00	14.00
	35	9,999	59.40	357.37	12.9	9927.01	200.93	200.72 N	9.21 W	14.00	14.00	0.00	14.00
	36	10,012	61.20	357.37	12.9	9933.38	212.10	211.87 N	9.73 W	14.00	14.00	0.00	14.00
	37	10,025	63.00	357.37	12.9	9939.39	223.46	223.22 N	10.25 W	14.00	14.00	0.00	14.00
	38	10,038	64.80	357.37	12.9	9945.05	235.00	234.76 N	10.78 W	14.00	14.00	0.00	14.00
	39	10,050	66.60	357.37	12.9	9950.34	246.72	246.46 N	11.31 W	14.00	14.00	0.00	14.00
	40	10,063	68.40	357.37	12.9	9955.26	258.60	258.33 N	11.86 W	14.00	14.00	0.00	14.00
	41	10,076	70.20	357.37	12.9	9959.81	270.63	270.34 N	12.41 W	14.00	14.00	0.00	14.00
	42	10,089	72.00	357.37	12.9	9963.97	282.79	282.49 N	12.97 W	14.00	14.00	0.00	14.00
	43	10,102	73.80	357.37	12.9	9967.75	295.08	294.77 N	13.53 W	14.00	14.00	0.00	14.00
	44	10,115	75.60	357.37	12.9	9971.14	307.48	307.15 N	14.10 W	14.00	14.00	0.00	14.00
	45	10,128	77.40	357.37	12.9	9974.14	319.98	319.64 N	14.67 W	14.00	14.00	0.00	14.00
	46	10,140	79.20	357.37	12.9	9976.75	332.57	332.22 N	15.25 W	14.00	14.00	0.00	14.00
	47	10,153	81.00	357.37	12.9	9978.96	345.23	344.87 N	15.83 W	14.00	14.00	0.00	14.00
	48	10,166	82.80	357.37	12.9	9980.77	357.96	357.59 N	16.42 W	14.00	14.00	0.00	14.00
	49	10,179	84.60	357.37	12.9	9982.18	370.74	370.35 N	17.00 W	14.00	14.00	0.00	14.00
	50	10,192	86.40	357.37	12.9	9983.19	383.56	383.15 N	17.59 W	14.00	14.00	0.00	14.00
	51	10,205	88.20	357.37	12.9	9983.80	396.40	395.98 N	18.18 W	14.00	14.00	0.00	14.00
END OF CURVE	52	10,218	90.00	357.37	12.9	9984.00	409.26	408.82 N	18.77 W	14.00	14.00	0.00	0.00
CASING SHOE	53	10,250	90.00	357.37	32	9984.00	441.26	440.79 N	20.24 W	0.00	0.00	0.00	0.00
NO TURN	54	10,550	90.00	357.37	300	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	0.00	0.00
	55	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	56	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	57	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	58	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	59	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	60	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	61	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	62	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	63	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	64	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	65	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	66	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	67	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	68	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00

	69	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	70	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	71	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	72	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	73	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	74	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	75	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	76	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	77	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	78	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	79	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	80	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	81	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	82	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	83	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	84	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	85	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	86	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	87	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	88	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	89	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	90	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	91	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	92	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	93	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	94	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	95	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	96	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	97	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	98	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	99	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	100	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	101	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	102	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
	103	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
NO TURN	104	10,550	90.00	357.37	0.00	9984.00	741.26	740.48 N	34.00 W	0.00	0.00	4.00	0.00
TD	105	19,360	90.00	357.37	9310.32	9984.00	10051.58	10041 N	461 W	0.00	0.00	0.00	0.00
OPEN HOLE PAY													
9,610													

XTO Energy, Inc.
BOP STACK DIAGRAM

FBIR Grinnell 34X-33
Location: SW SE Sec 33, 149N-91W
Footage: 291 ft FSL, 2226 ft FEL
Elev: Graded Pad 1966', KB 1989'
Dunn County, ND



XTO Energy, Inc.

CHOKE MANIFOLD DRAWING

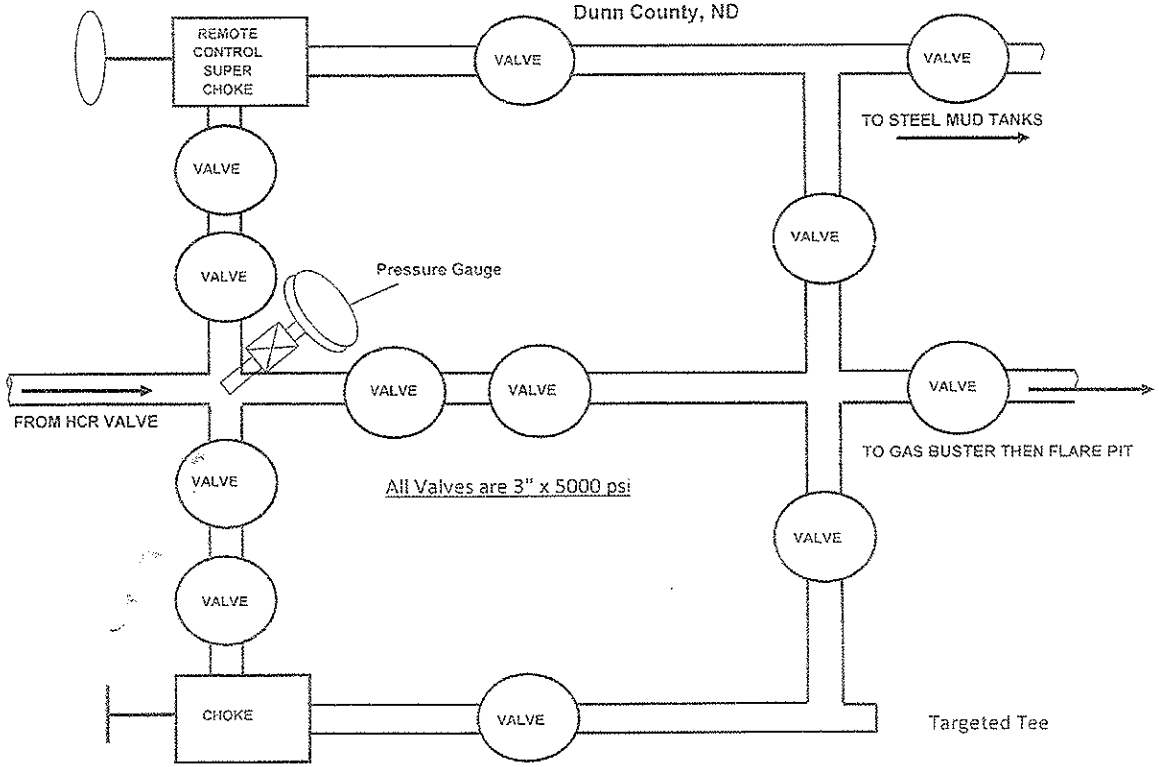
FBIR Grinnell 34X-33

Location: SW SE Sec 33, 149N-91W

Footage: 291 ft FSL, 2226 ft FEL

Elev: Graded Pad 1966', KB 1989'

Dunn County, ND



XTO ENERGY INC
H2S CONTINGENCY PLAN

FBIR Grinnell 34X-33

Location: SW SE Sec 33, 149N-91W
Footage: 291 ft FSL, 2226 ft FEL
Elev: Graded Pad 1966', KB 1989'

Dunn County, ND

Latitude 47.674917N
Longitude 102.330647W

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- B. Directions to Well Site
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- E. Mud Program and Treating
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I. INTRODUCTION

A. OPERATOR'S ADDRESS AND PHONE

XTO ENERGY, INC.
PO BOX 1589 or 35399 Highway 23 - 8 miles East
SIDNEY, MT 59270
406-482-4000 (24 HR #)

B. DIRECTIONS TO WELL SITE

From Mandaree, ND: 15.3 mi E on BIA 12, 2.3 mi NE on BIA 13, 0.4 mi E on existing rd, 1.6 mi SE on proposed access rd to FBIR Headless Turtle 44X-32, 0.5 mi E on proposed

C. PURPOSE OF PLAN

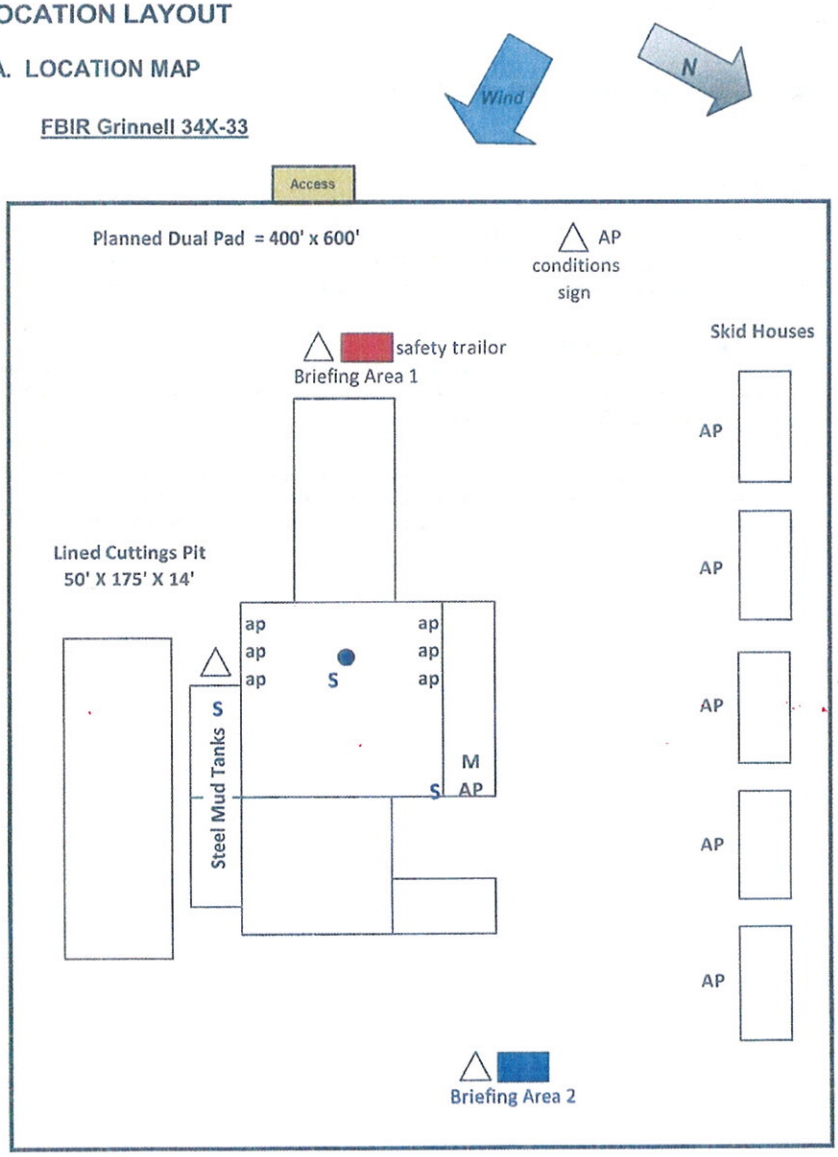
The purpose of this plan is to safeguard the lives of the public, contract personnel and company personnel in the event of equipment failure or disasters during drilling or completion operations in formations which may contain Hydrogen Sulfide Gas, H2S.

As a precautionary measure, this H2S Contingency Plan has been prepared to assure the safety of all concerned, should a disaster occur. However, the Operator's on-site representative may have specified materials and practices for the drilling or completion of this well, which supercede the minimum requirements as outlined in this plan.

II. LOCATION LAYOUT

A. LOCATION MAP

FBIR Grinnell 34X-33



MAP KEY

△	WIND SOCK
M	H2S MONITOR
AP	30 MIN SCBA PACK
ap	5 MIN SAR W/ EGRESS
S	H2S SENSOR

III. SAFETY EQUIPMENT

All H2S related safety equipment must be installed, tested and operational at a depth of 500 feet above, or 3 days prior to penetrating the first zone expected to contain H2S (whichever comes first).

A. SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

1. Safety trailer w/ 10-380 C.F. cylinder air supply system
2. Sufficient low-pressure airline hose with quick connects
3. Six-airline mask w/emergency escape cylinders
4. Seven 30 minute self contained breathing apparatus
5. Airline manifolds and air pack stands to accompany air packs
6. Three windsocks, frames and poles
7. Oxygen powered resuscitator
8. One set of signs
9. One 36 unit first aid kit
10. One 30# fire extinguisher
11. One stretcher
12. Flare gun w/shells (supplied upon request)
13. Gastec pump type gas detector w/full range of H2S detector tubes
14. One air cylinder w/regulator and filler hose for briefing area #2
15. H2S and briefing area signs
16. Well condition signs and flags
17. Explosion-proof bug blower (provided upon request)
18. 3 channel electronic monitor w/explosion proof warning system
19. One SO2 (Sulfur Dioxide) portable detector (supplied if or when H2S is being flared)
20. Additional equipment - added as needed.

B. TYPE OF EQUIPMENT AND STORAGE LOCATIONS

1. There will be six Scott airline masks on location. Five will be located on the rig floor with access to the shale shaker. One will be located in the derrick. Each mask will have an easily accessible air line hose.

2. There will be seven 30-minute self-contained breathing apparatus on location. They will be positioned as follows: one at Operator's representative's trailer, one at Tool Pusher's trailer, one at Briefing Area #1 one at Briefing Area #2, one at rig dog house stairway, one at mud logger's trailer and one at hopper area.

3. A Gastec, pump type, gas detector with low and high range detector tubes will be located in the doghouse

4. Two cleared, briefing areas will be designed as Safe Briefing Areas #1 and #2.

5. The Briefing Area most upwind is designated as Safety Briefing Area #1. In an emergency, personnel must assemble at this upwind area for instructions from their supervisor.

6. The H2S Safety Trailer will contain a cascade system of (10) 380 C.F. air cylinders that will provide a continuous air supply to air lines located on the rig. It will also contain one resuscitator, one 30 minute air pack and one stretcher, one 36 unit first aid kit, one 30# dry chemical fire extinguisher, and will have a windsock or streamer to indicate wind direction.

7. Two other windsocks will be installed so as to be visible from all parts of the location.

8. A well condition warning sign will be displayed at the location entrance to advise of current operating conditions.

9. A list of emergency telephone numbers will be kept on rig floor, tool pusher's trailer, the Operator's on-site representative's trailer and in the Safety Trailer.

10. A barricade will be available to block the entrance to location should an emergency occur. In most cases, a vehicle will be used to block the entrance.

11. A three-channel H2S monitor will be located in the doghouse. The three sensors will be installed: one on the shale shaker, one in the cellar and one near the bell nipple.

12. An undulating high and low pitch siren and light will be installed on the derrick "A" leg.

13. If H2S concentrations reach 10 ppm, an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H2S.

14. Any time it is necessary to flare gas containing H2S, a Sulfur Dioxide monitor will be used to determine SO2 concentrations

C. MAXIMUM NUMBER OF PEOPLE ON LOCATION AT ANY ONE TIME

1. There will be a maximum of 13 persons on location at any one time, unless additional respirators are provided during special operations where more than 13 persons will be on location.

IV. OPERATING PROCEDURES

A. BLOWOUT PREVENTION MEASURES DURING DRILLING

1. Blowout Prevention Requirements: All BOP equipment shall meet the American Petroleum Institute specifications as to materials acceptable for H2S service and tested accordingly (or to BLM specifications).

2. Drilling String Requirements: All drill string components are to be of material that meets the American Petroleum Institute's specifications for H2S service. All drill string components should be inspected to IADC critical service specifications prior to running in well.

B. GAS MONITORING EQUIPMENT

1. A continuous H2S detection system, consisting of three H2S detectors and an audible/visual warning system will be in operation during all phases of this H2S Contingency Plan. The detection system will be adjusted and calibrated such that an H2S exposure of 10 ppm or higher (at any sensor) will trigger the visual portion (blinking or rotating light), and an H2S exposure of 15 ppm or higher (at any sensor) will trigger the audible portion (wailing or yelping siren) of the warning system (i.e., H2S continually present at or above threshold levels). A trained operator or H2S supervisor will monitor the H2S detection system.

2. When approaching or completing H2S formations, crewmembers may attach 8-hour electronic H2S personnel monitors to their person.

3. Hand held H2S sampling gas detectors will be used to check areas not covered by automatic monitoring equipment.

C. CREW TRAINING AND PROTECTION

1. All personal working at the well site will be properly trained in accordance with the general training requirements outlined in the API Recommended Practices for Safe Drilling of Wells Containing H2S. The training will include, but not be limited to, the following:

a. General information about H2S and SO2 gases
b. Hazards associated with H2S and SO2 gases
c. Safety equipment on location
d. Proper use and care of personal protective equipment
e. Operational procedures in dealing with H2S gas
f. Evacuation procedures
g. First aid, reviving an H2S victim, toxicity, etc.
h. Designated Safe Briefing Areas
i. Buddy System
j. Regulations
k. Review of Drilling Operations Plan

2. Initial training shall be completed when drilling reaches a depth of 500' above or 3 days prior to penetrating (whichever comes first) the first zone containing or expected to contain H2S.

3. Weekly H2S and well control drills for all personnel on each working crew shall be conducted.

4. Safety Equipment: As outlined in the Safety Equipment index, H2S safety protection equipment will be available to/or assigned each person on location.

D. METALLURGICAL CONSIDERATONS

1. Steel drill pipe used in H2S environments should have yield strength of 95,000 psi or less due to potential embrittlement problems. Drill stem joints near the top of the drill string are normally under the highest stress levels during drilling and do not have the protection of elevated down hole temperatures. These factors should be considered in design of the drill string.
Precautions should be taken to minimize drill string stress caused by conditions such as excessive dogleg severity, improper torque, whip, abrasive wear or tool joints and joint imbalance. American Petroleum Institute, Bulletin RR 7G, will be used as a guideline for drill string precautions.

2. Corrosion inhibitors may be applied to the drill pipe or to the mud system as an additional safeguard.

3. Blowout preventors should meet or exceed the recommendations for H2S service as set forth in the latest edition of API Rl 53.

E. MUD PROGRAM AND TREATING

1. It is of utmost importance that the mud be closely monitored for detection of H2S and reliability of the H2S treating chemicals.

2. Identification and analysis of sulfides in the mud and mud filtrates will be carried out per operator's prescribed procedures.

3. The mud system will be pre-treated with Zinc Carbonate, Ironite Sponge or similar chemicals of H2S control prior to drilling into the H2S bearing formation. Sufficient quantities of corrosion inhibitor should be on location to treat the drill string during Drill Stem Test Operations. Additionally, Aqua Ammonia should be on hand to treat the drill string for crew protection, should H2S be encountered while tripping the drill string following drill stem testing

F. WELL CONTROL EQUIPMENT

1. Flare System
    a. A flare system shall be designed and installed to safely gather and burn H2S bearing gas.
    b. Flare lines shall be located as far from the operating site as feasible and in a manner to compensate for wind changes.
    c. The flare line mouth shall be located not less then 150' from wellbore.
    d. Flare lines shall be straight unless targeted with running tees.

2. Remote Controlled Choke: A remote controlled choke shall be installed for all H2S drilling and where feasible for completion operations. A remote controlled valve may be used in lieu of this requirement for completions operations.

3. Mud-gas separators and rotating heads shall be installed and operable for all exploratory wells.

V. OPERATING CONDITIONS

A Well Condition Sign and Flag will be posted on all access roads to the location. The sign shall be legible and large enough to be read by all persons entering the well site and be placed a minimum of 200', but no more than 500', from the well site to allow vehicles to turn around at a safe distance prior to reaching the site.

A. DEFINITION OF WARNING FLAGS

1. Condition Green: Safe Area. Any operation where the possibility of encountering H2S does not exist.

2. Condition Yellow: Potential Danger. Any operation where the possibility of encountering H2S exists and in all situations where concentrations of H2S are detected in the air below the threshold level (10 ppm).

a. Cause of condition:
- *Circulating up drill breaks
- *Trip gas after trip
- *Circulating out gas on choke
- *Poisonous gas present, but below threshold concentrations
- *Drill stem test

b. Safety Action:
- *Check safety equipment and keep it with you
- *Be alert for a change in condition
- *Follow instructions

3. Condition Red: Extreme Danger. Presence of H2S at or greater than 10 ppm. Breathing apparatus must be worn.

a. Safety action:
- *MASK UP. All personal will have protective breathing equipment with them. All nonessential personnel will move to the Safe Briefing Area and stay there until instructed to do otherwise. All essential personnel (those necessary to maintain control of the well) shall wear breathing apparatus to perform operations related to well control.

b. Order evacuation of local people within the danger zone. Request help from local authorities, State Police, Sheriff's Dept. and Service Representative.

c. The decision to ignite the well is the responsibility of the Operator's on-site representative and should be made only as a last resort, when it is clear that:
- *human life is endangered
- *there is no hope of controlling the well under prevailing conditions

B. CIRCULATING OUT KICK (WAIT AND WEIGHT METHOD)

If it is suspected that H2S is present with the gas whenever a kick is taken, the wait and weight method of eliminating gas and raising the mud will be followed (below):

a. Increase density of mud in pits to 'kill' weight mud.

b. Open choke and bring pump to initial circulating pressure by holding casing pressure at original value until pump is up to predetermined speed.

c. When initial circulating pressure is obtained on drill pipe, zero pump stroke counter and record time.

d. Reduce drill pipe pressure from initial circulating pressure to final circulating pressure by using pump strokes and/or time according to graph

e. When 'kill' weight mud is at the bit, hold final circulating pressure until kill weight mud is to surface.

f. When the well has been put on the choke and circulation has been established, the following safety procedures must be initiated:
- *determine when gas is anticipated to reach surface
- *move all non-essential personnel to Safe Briefing Area
- *check out protective breathing apparatus to all remaining personnel (apparatus is to be kept with them until the kick has been completely circulated out)
- *mud men will see that the proper amount of H2S scavenging chemical is in

the mud and record times checked
*ensure ignition flare is burning and valves are open to designated flare stacks

C. CORING OPERATIONS IN H2S BEARING ZONES

1. Personal protective breathing apparatus will be worn from 10 to 15 stands in advance of retrieving the core barrel. Cores to be transported should be sealed and marked indicating the presence of H2S.
   a. Yellow Caution Flag will be flown at the well condition sign.
   b. The "NO SMOKING" rule will be enforced

D. DRILL STEM TESTING OF H2S ZONES

1. The DST subsurface equipment will be suitable for H2S service as recommended by the API.

2. Drill stem testing of H2S zone will be conducted in daylight hours.

3. All non-essential personnel will be moved to an established safe area or off location.

4. The "NO SMOKING" rule will be enforces.

5. DST fluids will be circulated through a remote controlled choke and a separator to permit flaring of gas. A continuous pilot light will be used.

6. A yellow or red flag will be flown at entrance to location depending on present gas condition.

7. If warranted, use Aqua Ammonia for neutralizing the toxicity of H2S from drill string. Aqua Ammonia should be on location even if not used for DST.

8. On completion of DST, if H2S contaminated formation fluids or gases are present in drill string, floor workers will be masked up before test valve is removed from drill string and continue "mask on" condition until such time that readings in work area do not exceed 15 ppm of H2S gas.

VI. EMERGENCY PROCEDURES

A. SOUNDING ALARM

1. The fact is to be instilled in the minds of all rig personnel that the sounding of the alarm means only one thing - H2S IS PRESENT and everyone is to proceed to his assigned station and the contingency plan is put into effect.

B. DRILLING CREW ACTIONS

1. All personnel will don their protective breathing apparatus. The driller will take necessary precautions as indicated in operating procedures.

2. The Buddy system will be implemented. All personnel will act upon directions from the Operator's on-site representative.

3. If there are non-essential personnel on location, they will move off location.

4. Entrance to the location will be patrolled, and the proper well condition flag will be displayed at the entrance to the location.

C. RESPONSIBILITIES OF PERSONNEL

1. In order to assure the proper execution of this plan, it is essential that one person be responsible for and in complete charge of implementing these procedures. The responsibe person will be as follows:

   a. The Operator's on-site representative (consultant) or his assistant.
   b. Contract Tool Pusher.

D. STEPS TO BE TAKEN

1. Contact the main office(s) of the Operator &/or the Rig Contractor as listed in this plan below (by the quickest means of communications):

2. An assigned crewmember will blockade the entrance to the location. No unauthorized personnel will be allowed entry into the location.

3. The Operator's on-site representative will remain on location and attempt to regain control of the well.

4. The Rig Contractor's rig superintendent will begin evacuation of those persons in immediate danger. He will begin by telephoning residents in the danger zone. In the event of no contact by telephone, the tool pusher will proceed at once to each dwelling for a person-to-person contact. In the event the tool pusher cannot leave the location, he will assign a responsible crewmember to proceed in the evacuation off local residents. Upon arrival, the Sheriff's Department and safty equipment contractor's personnel will aid in further evacuation.

E. COMPANY & CONTACT PERSONNEL

1. Operator's Drilling Supt	Office	406-482-6808
Kal Beckman	Home	701-572-6057
	Cell	701-570-2536
2. Operator's Drilling Engineer	Office	405-319-3285
Ross Lubbers	Home	405-513-5955
	Cell	405-659-8563
3. Patterson Drilling Supt	Office	701-483-6640
John Hlebechuk	Cell	701-260-2904
4. Nabors Drilling Supt	Office	701-572-6704
Scott Reid	Home	701-385-4697
	Cell	701-848-6227
5. Petroleum Experience – Drilling Consultants		
Pete Peterson	Office	701-774-8357

F. LEAK IGNITION

Leak Ignition Procedure: (used to ignite a leak in the event it becomes necessary to protect the public)

1. Two men, the Operator's on-site representative and the Contractor's Drlg Superintendent or safety equipment provider's representative, wearing self-contained pressure demand air masks must determine the perimeter of the flammable area. This should be done with one man using an H2S detector and the other one using a flammable gas detector. The flammable perimeter should be established at 30% to 40% of the lower flammable limits.

2. After the flammable perimeter has been established and all employees and citizens have been removed from the area, the ignition team should move to the up-wind area of the leak perimeter and fire a flare into the area. If the leak isn't ignited on the 1st attempt, move in 30 - 40 feet and fire again. Continue moving in and firing until the leak is ignited or the flammable gas detector indicates the ignition team is moving into the hazardous area. If trouble is incurred in igniting the leak by firing toward the leak, try firing 40 - 90 feet to each side of the area where you have been firing. If still no ignition is accomplished, ignite the copper line burner and push it into the leak area. This should accomplish ignition. If ignition is not possible due to the makeup of the gas, the toxic leak perimeter must be established and maintained to ensure evacuation is completed and continue until the emergency is secure.

3. The following equipment and man-power will be required to support the ignition team:

   a. One flare gun.
   b. Four pressure demand air packs.
   c. Two nylon ropes tied to the ignition team.
   d. Two men in a clear area equipped with air packs.
   e. Portable butane bottle with copper line.

4. The person with the final authority will then ignite the well.

G. GENERAL EQUIPMENT

1. Two areas on the location will be designated as briefing areas. The one that is upwind from the well will be designated as the "Safe Briefing Area" or "Briefing Area #1".

2. In the case of an emergency, personnel will assemble in the upwind area as per prior instructions from the operator's representative.

3. The H2S trailer provided by the safety contractor will contain 10 air cylinders, a resuscitator, one 30 minute air pack and will have a windsock.

4. Two other windsocks will be installed.

5. A condition warning sign will be displayed at the location entrance.

6. A list of emergency telephone numbers will be kept on the rig floor, tool pusher's trailer and the Operator's on-site representative's trailer.

7. Two barricades will be available to block the entrance to location.

8. An undulating high and low pitch siren will be installed.

9. A telephone line or mobile phone will be available at the well site for incoming and outgoing communications.

VII. APPENDIX

A. EMERGENCY & MEDICAL FACILITIES:

NORTH DAKOTA EMERGENCY ASSISTANCE:	800-472-2121
AMBULANCE SERVICE:	
BELFIELD, ND	911
DICKINSON, ND	911
SIDNEY, MT	406-488-2100
TIOGA, ND	701-664-2200
WILLISTON, ND	911
WATFORD CITY, ND	701-444-3516
KILLDEER, MANNING, ND	911
HOSPITALS:	
SIDNEY HEALTH CENTER - SIDNEY, MT	406-488-2100
MERCY MEDICAL CENTER - WILLISTON, ND	701-774-7400
McKENZIE COUNTY MEMORIAL HOSPITAL - WATFORD CITY	701-842-3000
ST. JOSEPH'S HOSPITAL - DICKINSON, ND	701-225-7200
TIOGA MEDICAL CENTER	701-568-3626

B. LAW ENFORCEMENT AND FIRE FIGHTING AGENCIES

POLICE or SHERIFF:			
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT	911	OR	406-433-2809
MCKENZIE COUNTY			701-444-3654
TIOGA - WILLIAMS COUNTY	911	OR	701-664-2514
WATFORD CIY, ND	911	OR	701-842-2400
MANNING, ND SHERIFF	911	OR	701-573-4449
FIRE:			
ALEXANDER, ND			911
ARNEGARD, ND			701-586-3500
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT			406-433-1122
TIOGA, ND			701-664-2200
WATFORD CITY, ND			701-842-3516
WILLISTON, ND			911

C. WELL CONTROL SPECIALISTS:

BOOTS AND COOTS	713-931-8884
RED ADAIR COMPANY INC	713-464-0230
WILD WELL CONTROL	701-353-5481

D: GOVERNMENTAL AGENCIES:

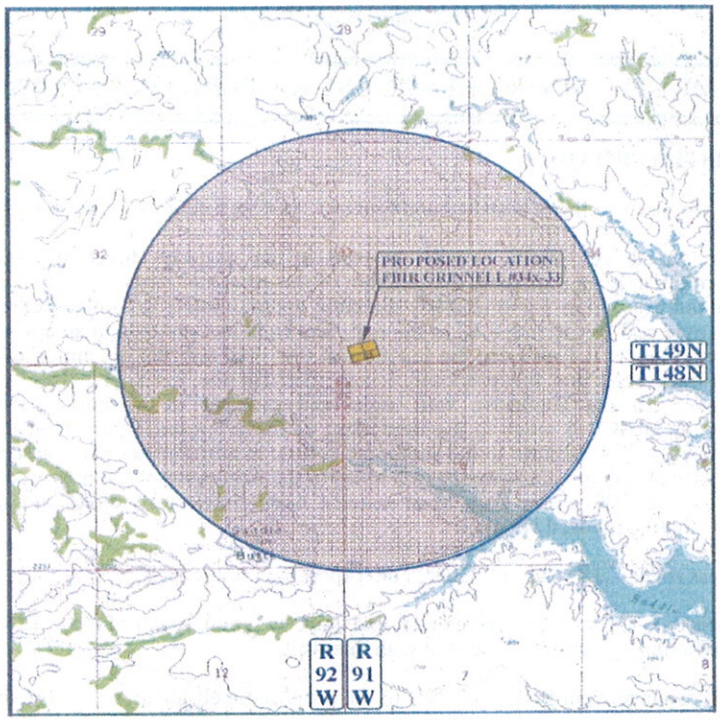
STATE WATER COMMISSION	701-224-4940
NDIC:	
CHIEF ENFORCEMENT OFFICER	701-224-2969
STATE GEOLOGIST	701-777-2231
NORTH DAKOTA STATE DEPARTMENT OF HEALTH:	
DIVISION OF ENVIRONMENTAL ENGINEERING	701-224-2348
DIVISION OF WATER &POLLUTION CONTROL:	
BISMARCK, ND	701-224-2375
DISTRICT FOREST SERVICE RANGER:	
DICKINSON, ND	701-225-5151
MEDORA, ND	701-623-4466
WATFORD CITY, ND	701-842-2393
BUREAU OF LAND MANAGEMENT:	
DICKINSON, ND	701-225-9148
U.S. CORPS OF ENGINEERS:	
RIVERDALE, ND	701-654-7411
OIL SPILLS DISASTER REPORTING:	800-424-8802

E. RADIO & TELEVISION STATIONS:

KEYZ AM 660	701-572-5371
KYYZ FM 96.1	701-572-3911
KDIX	701-225-5133
KRRB-FM	701-227-1222
KUMV TV	701-572-4676
KXMD TV	701-572-2345
KQCD TV	701-225-6843

VIII. RESIDENTS AND LANDOWNERS

A. 1 MILE RADIUS EXPOSURE MAP



B. RESIDENTS WITHIN 1 MILE AND PHONE NUMBERS

None

XTO ENERGY, INC.
FBIR Grinnell 34X-33
BIA Lease # 7420A49317
SW¼SE¼, Section 33, T149N, R91W
Dunn County, North Dakota

MULTI-POINT SURFACE USE & OPERATIONS PLAN

A. EXISTING ROADS -

1. The proposed well site is staked and four (4) 200-foot reference stakes are present.

2. From Mandaree, North Dakota proceed in an easterly direction along BIA 12 approximately 15.3 miles to the junction of this road and BIA 13 to the northeast; turn left and proceed in a northeasterly direction approximately 2.3 miles to the junction of this road and an existing road to the east; turn right and proceed in an easterly direction approximately 0.4 miles to the junction of this road and the beginning of an existing two-track road and the proposed access road for the FBIR HeadlessTurtle 44X-32 location to the southeast; turn right and proceed in a southeasterly direction approximately 1.6 miles to the beginning of the proposed access road for the FBIR Grinnell 41X-1 location to the southeast; follow two-track road in a southeasterly, then easterly direction approximately 0.5 miles to the beginning of the proposed access road to the east; follow road flags in an easterly, then northeasterly direction approximately 673' to the proposed location.

3. Access roads - All roads are labeled on Topo Maps A and B.

4. Existing roads will be maintained and kept in good repair during all drilling and completion operations associated with this well.

5. Total distance from Mandaree, ND to the proposed well location is approximately 20.2 miles.

B. PLANNED ACCESS ROADS - Refer to Topo Map "B"

Approximately 673' of new road construction will be required for access to the proposed FBIR Grinnell 34X-33 well location.

1. Width - fourteen (14) foot running surface with a sixteen (16) foot sub-grade, crowned and ditched.

2. Construction standard - the access road will be constructed in accordance with roading guidelines established for oil & gas exploration and development activities as referenced in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.

   All topsoil will be stripped from the access road route prior to performing any further construction activities thereon. The salvaged topsoil will be stockpiled apart from subsoil materials for future reclamation of the access road right-of-way. The topsoil will be covered in matting and/or seeded to prevent erosion and maintain fertility.

If soils along the access road route are dry during construction, water will be applied to the road surface to facilitate soil compaction and minimize soil loss as a result of wind erosion.

3. Maximum grade - eight (8) percent or less.

4. Turnouts – as deemed necessary

5. Drainage design - the access road will be upgraded and maintained as necessary to prevent soil erosion and accommodate all-weather traffic. Road will be crowned and ditched with water turnouts installed as necessary to provide for proper drainage along the access road route.

6. Culverts, cuts and fills – no culverts will be required at this time.

7. Surfacing material - the access road will be surfaced with gravel or scoria purchased from a local contractor having a permitted source of materials within the general area, as required by the Authorized Officer, Bureau of Indian Affairs.

8. Gates, cattle guards or fence cuts - one (1) cattle guard will be required at the entrance of the location as the entire location will be fenced for drilling and completion operations. See Topo Map B and Figure #1 for location of cattle guards.

    a. The cattle guard will be installed in accordance with roading guidelines contained in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.
    b. No fence cuts will be required.

9. Road maintenance - the road surface and shoulders will be kept in a safe and useable condition and will be maintained in accordance with the original construction standards.

    All drainage ditches and culverts will be kept clear and free-flowing, and will also be maintained in accordance with the original construction standards.

    The access road right-of-way will be kept free of trash during all operations.

10. The proposed access road route has been centerline staked.

C. EXISTING WELLS WITHIN A ONE (1) MILE RADIUS -

1. Existing Wells – Refer to Topo Map C showing the location of the proposed well and the point of radius for the one mile area of review.

a. Water wells	- none known
b. Abandoned wells	- none known
c. Temporarily abandoned wells	- none known
d. Disposal wells	- none known
e. Drilling wells	- none known
f. Producing wells	- none known
g. Shut-in wells	- none known
h. Injection wells	- none known

i. Monitoring wells - none known

D. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES OWNED BY XTO ENERGY, INC. WITHIN A ONE (1) MILE RADIUS

1. Existing Facilities

   a. Tank batteries - none.
   b. Production facilities - none.
   c. Oil gathering lines - none.
   d. Gas gathering lines - none.

2. New Facilities Contemplated

   a. All production facilities will be located on the disturbed portion of the well pad and at a minimum of twenty (25) feet from the toe of the back slope or top of the fill slope. See Figure #1 and Figure #2 for plats depicting the original contours of the location and the proposed cuts and fills and the typical cross sections for the location.

   b. Production facilities will require a working area approximately 300' X 500' in size and will generally consist of a pumping unit at each well head, tank battery, heater-treater and emergency/flare pit.

   A berm will be constructed completely around those production facilities designed to hold fluids (i.e., production tanks, produced water tanks and/or heater-treater). These berms will be constructed to hold >110% of the capacity of the largest tank plus one full day's production, and is independent of the back cut. See Figure #3 for a diagram of the proposed facilities.

   Load out lines will be located within the tank battery berm and will have a drip barrel with steel mesh guard installed under the outlet.

3. Prior to the commencement of drilling operations, the FBIR Grinnell 34X-33 well location will be fenced, having four (4) strands of barbed wire held in place by metal side posts and wooden corner "H" braces in order to protect both livestock and wildlife.

4. During drilling and subsequent operations, all equipment and vehicles will be confined to the access road and any additional areas which may be specified in the approved Application for Permit to Drill.

5. Reclamation of disturbed areas no longer needed for operations will be accomplished by grading, leveling and seeding as recommended.

E. LOCATION AND TYPE OF WATER SUPPLY

1. Fresh water for use in drilling operations will be obtained from the water supply close to the town of Killdeer, North Dakota.

F. SOURCE OF CONSTRUCTION MATERIALS

1. Any construction materials (gravel or scoria) which may be required for surfacing of the drill pad will be obtained from a private contractor having a previously approved source of materials within the general area.

G. METHODS OF HANDLING WASTE MATERIALS

1. Cuttings - the drilled cuttings will be deposited in the cuttings pit as shown on Figure #4 and Figure #5. The cuttings pit will be designed to prevent the collection of surface runoff and will be constructed entirely in cut section of the well location (see Figure #1). If active drilling is not occurring, the cuttings pit will have nylon netting placed over the entire pit to prevent migratory birds and other wildlife from entering the pit. A maximum mesh size of 1.5 inches will allow for snow loading and will exclude most birds. The netting will be placed at least five feet from the top surface of any pit fluids to prevent the mesh from sagging into the fluids during snow loading events or high winds. The cuttings pit will be appropriately fenced to prevent access by persons, wildlife or livestock. Three non-working sides will be fenced during drilling operations and the fourth side will be fenced once drilling and/or completion rigs have been moved off location. If completion does not occur immediately subsequent to drilling operations, the fourth side will be fenced immediately upon drilling rig release.

   Reclaiming and backfilling will occur when completion operations are finished by solidifying with fly ash and burial in accordance with North Dakota Industrial Commission, Department of Mineral Resources, rules and regulations.

2. Drilling fluids utilized in the fresh water mud systems will be contained in steel tanks. Drilling fluids utilized in the oil-based mud system will be contained in steel tanks on location. During drilling, there will be a 2' berm surrounding the oil based mud tanks. All free fluid will be reclaimed from the cuttings pit before solidification.

3. Produced fluids - liquid hydrocarbons produced during completion operations will be placed in test tanks on the location.

   Any spills of oil, gas, salt water or any other potentially hazardous substance will be cleaned up and immediately removed to an approved disposal site.

4. Sewage - portable, self-contained chemical toilets will be provided for human waste disposal. As required, the toilet holding tanks will be pumped and the contents disposed of in an approved sewage disposal facility.

5. Garbage and other waste material - all garbage and non-flammable waste materials will be contained in a self contained, portable dumpster or trash cage. Upon completion of operations, or as needed, the accumulated trash will be hauled off-site to a state approved sanitary landfill.

   Used motor oil (change oil) will be placed in closed containers and disposed of at an authorized disposal site.

   No trash will be placed in the reserve pit.

6. Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage will be cleaned up and removed from the well location. No potentially adverse materials or substances will be left on the location.

7. Hazardous Materials – XTO Energy, Inc. maintains responsibility for recognizing and handling hazardous materials. All hazardous materials will be handled in an appropriate manner to minimize the potential for leaks or spills to the environment. All spills of reportable quantity will be contained, reported and cleaned up in accordance with State and Federal regulations.

H. ANCILLARY FACILITIES

None anticipated.

I. WELLSITE LAYOUT

1. Figure #1 shows the drill site layout as staked. Cross-sections have been drafted to visualize the planned cuts and fills across the proposed well location (refer to Figure #2). All topsoil will be stripped from the location (including areas of cut, fill, and/or subsoil storage) and stockpiled in two separate areas for future reclamation of the well site. The topsoil will be covered in matting and/or seeded to prevent erosion and maintain fertility. Best Management Practices including matting and straw booms/waddles will be used to aid in prevention of soil erosion. Fill slopes shall be covered in matting immediately.

2. Figure #4 is a diagram showing a typical location layout. No permanent living facilities are planned on the FBIR Grinnell 34X-33 well location.

3. All equipment and vehicles will be confined to the approved areas in this Application for Permit to Drill (i.e., access road, well pad, spoil and topsoil storage areas).

4. The cuttings pit will be lined with a minimum 12 mil liner and designed to maintain a two foot free board. See Figure #6 for a spec sheet on the proposed liner.

5. Prior to the commencement of drilling operations, the entire well location will be fenced with four (4) strands of barbed wire. The fencing will be maintained until such time as the well bore has been physically plugged and abandoned and the well location has been successfully reclaimed.

6. Any hydrocarbons on the pit will be removed as soon as possible after drilling operations are completed.

J. PLANS FOR SURFACE RECLAMATION

1. Rat and mouse holes will be backfilled immediately upon release of the drilling rig from the location.

2. The cuttings pit will be solidified with fly ash as soon as possible after rig release and the liner will be folded over and the cuttings buried on site.

3. Producing Operations:

   a. Backfilling, leveling and re-contouring are planned as soon as possible after cessation of drilling and completion operations.

   b. All disturbed surfaces (including the access road and well pad areas) will be reseeded using a seed mixture to be recommended by the Authorized Officer, Bureau of Indian Affairs in consultation with the surface allottee as appropriate.

4. Abandoned Well Location:

   a. Upon final abandonment of the well location, both the access road and well location will be restored to approximately the original ground contour(s) by replacing the fill material into the cut and over the back slope.

K. SURFACE OWNERSHIP

The well site and access road are situated on allotted lands within the Fort Berthold Indian Reservation, Allotment Numbers 1944. The owners of these lands are:

Cheryl K. Estep
2479 Roundhill Drive
Alamo, CA 94507

Darrell Fielder
3826 Vineland Ave.
Studio City, CA 91604

Clinton B. Fielder
3901 Fairman St.
Lakewood, CA 90712

Yvette C. Fielder
2520 W. Bartlett Way
Queen City, AZ 85240

Julia R. Smith
P. O. Box 461
Parshall, ND 58770

Ronald Grinnell
P. O. Box 1161
New Town, ND 58763

Keith O. Grinnell
1024 5th St. SW
Sidney, MT 59270

Curtis Grinnell
3076 Twin Oaks Road
Cameron Park, CA 95682

Dwight J. Grinnell
P. O. Box 943
New Town, ND 58763

Eric P. Grinnell
1624 S. 14th St.
Grand Forks, ND 58201

Gina Marie Ainsworth
507 S. Kent St.
Madison, NE 68748

Michael D. Grinnell
P. O. Box 482
Oneal, NE 68763

Lawrence Grinnell
P. O. Box 551
New Town, ND 58763

Tiffany Leigh Grinnell
30001 Golden Lantern, A314
Laguna Niguel, CA 92677

Heather Marie Grinnell
Fort Berthold Agency
New Town, ND 58763

Trevor Edward Grinnell
Fort Berthold Agency
New Town, ND 58763

Sharon Grinnell
7841 Shinarump Dr.
Golden Valley, AZ 86413

Luther E. Grinnell
13101 Hubbard St.
Sylmar, CA 91342

David Anthony Grinnell
1208 Warren Lane
Grand Island, NE 68801

Barbara Hamner
54427 Pine Tree Lane
North Fork, CA 93643

Aileen Jackson
P. O. Box 75
New Town, ND 58763

Muriel K. Wounded Face
5225 East Thomas Rd, A137
Phoenix, AZ 85018

Steven J. Kiser Estate
Address Unknown

Judith A. Ladeaux
9661 Apple Mill Dr.
Elk Grove, CA 95624

Randall Reese
P. O. Box 684
Miranda, CA 95553

Blaine Reese
P. O. Box 684
Miranda, CA 95553

Juli Hope Rowberg
285 NE Milbe Rd.
Hillsboro, OR 97124

Merle A. Smith
Box 146
Parshall, ND 58770

Charlie A. Smith
Box 146
Parshall, ND 58770

Jerome D. Smith
26 4th St. SW, Apt. 7
Parshall, ND 58770

Reba A. White Shirt
P. O. Box 45535
Phoenix, AZ 85064

John White Shirt
4197 E. Shelton Rd.
Wilcox, AZ 85643

Billie Jo Wounded Face
P. O. Box 656
Mandaree, ND 58757

Tex Wounded Face
P. O. Box 3024
Bismarck, ND 58502

Cynthia D. Zeyouma
P. O. Box 801
Parker, AZ 85344

L. OTHER INFORMATION

1. Surface Use Activities:

   a. The primary surface use is for livestock grazing.

2. Proximity of Water, Occupied Dwellings, Archaeological, Historical or Cultural Sites:

   a. The closest source of permanent water is Lake Sakakawea, which is located approximately 1.5 miles east of the proposed well location.

   b. XTO Energy, Inc. will be responsible for informing all persons associated with this project that they will be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects or site(s).

   c. If archaeological, historical or vertebrate fossil materials are discovered, XTO Energy, Inc. will suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations will not resume until written authorization to proceed is issued by the Authorized Officer.

      Within five (5) working days the Authorized Officer will evaluate the discovery and inform XTO Energy, Inc. of actions that will be necessary to prevent loss of significant cultural or scientific values.

      XTO Energy, Inc. will be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, XTO Energy, Inc. will be allowed to resume operations.

3. Additional Requirements for Operations on Surface Estate Administered by the Bureau of Indian Affairs:

   a. XTO Energy, Inc. will be responsible for weed control on disturbed areas within the exterior limits of this permit and will consult with the Authorized Officer, Bureau of Indian Affairs and/or local authorities for acceptable weed control measures.

Lessee's or Operator's Representative and Certification

FBIR Grinnell 34X-33
SWSE, Sec. 33-T149N-R91W
Dunn County, North Dakota
Lease No. 7420A49317

OPERATOR

XTO Energy, Inc.
7114 W. Jefferson Ave., Suite 305
Denver, Colorado 80235
303.969.8280

OPERATOR'S REPRESENTATIVES

Permit Matters: J. Michael Warren (303.963.8243)
Drilling Matters: Ross Lubbers (405-319-3285)
Completion Matters: Doug McCrady (303.969.8280)
On-Site Meeting Representative: Kal Beckman (406.482.4000)

CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 7th day of February, 20 11.

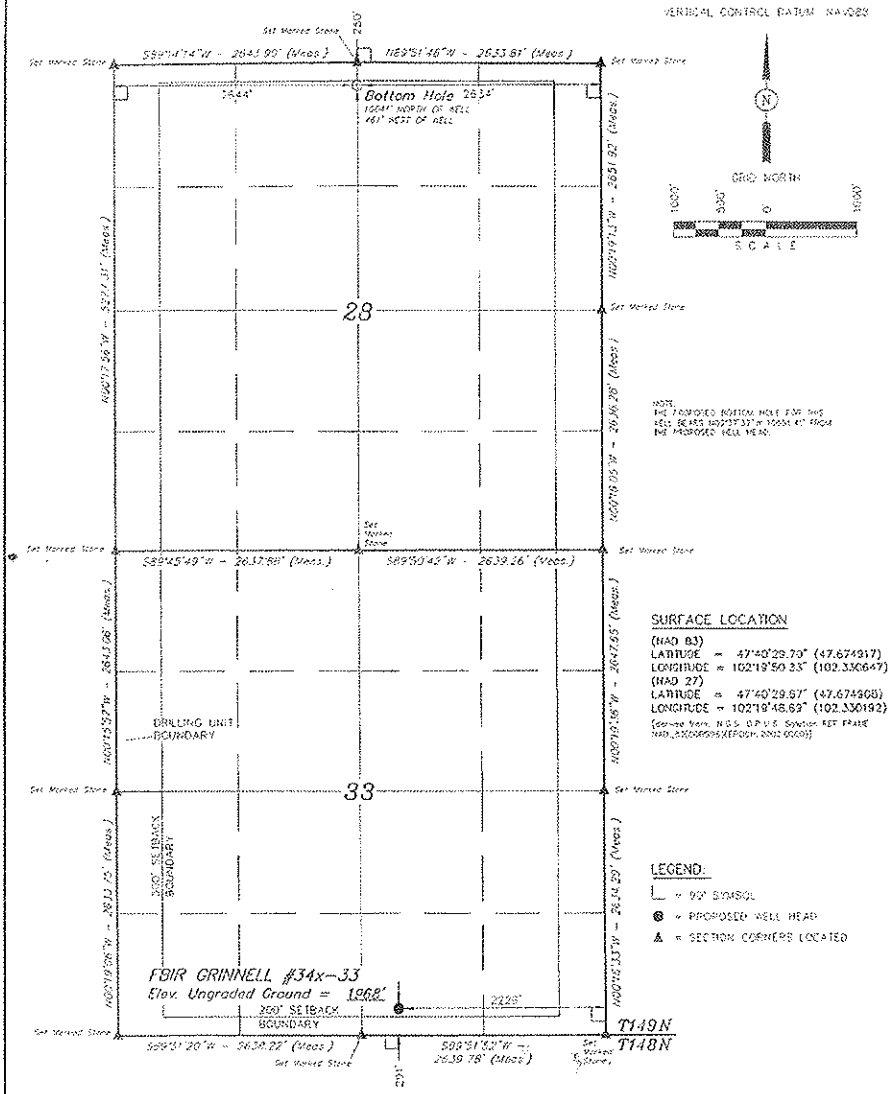
Name: J. Michael Warren
Position Title: Regulatory Coordinator
Telephone: 303-963-8243
mike_warren@xtoenergy.com

Field Representative: Kal Beckman
Address: P. O. Box 1589, Sidney, MT 59270
Phone: 406-482-4000 Ext. 107
kal_beckman@xtoenergy.com

WELL LOCATION PLAT
T149N, R91W, 5th P.M.

XTO ENERGY, INC.

Well location, FBIR GRINNELL #34x-33, located as shown in the SW 1/4 SE 1/4 of Section 33, T149N, R91W, 5th P.M., Dunn County, North Dakota



SURFACE LOCATION

(NAD 83)
LATITUDE = 47°40'29.70" (47.674917)
LONGITUDE = 102°19'50.33" (102.330647)
(NAD 27)
LATITUDE = 47°40'29.57" (47.674908)
LONGITUDE = 102°19'48.69" (102.330192)
(Surface from N.G.S. O.P.U.S. Solution SET PLATE HERE, AVERAGING XEFORM, 2002 GEOID)

LEGEND:

- = 90° SYMBOL
- = PROPOSED WELL HEAD
- = SECTION CORNERS LOCATED

CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

TROY JENSEN
REGISTERED LAND SURVEYOR
NO. 7654
NORTH DAKOTA

REGISTERED LAND SURVEYOR
REGISTRATION NO. 4654
STATE OF NORTH DAKOTA

UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL UTAH 84078
(435) 789-1017

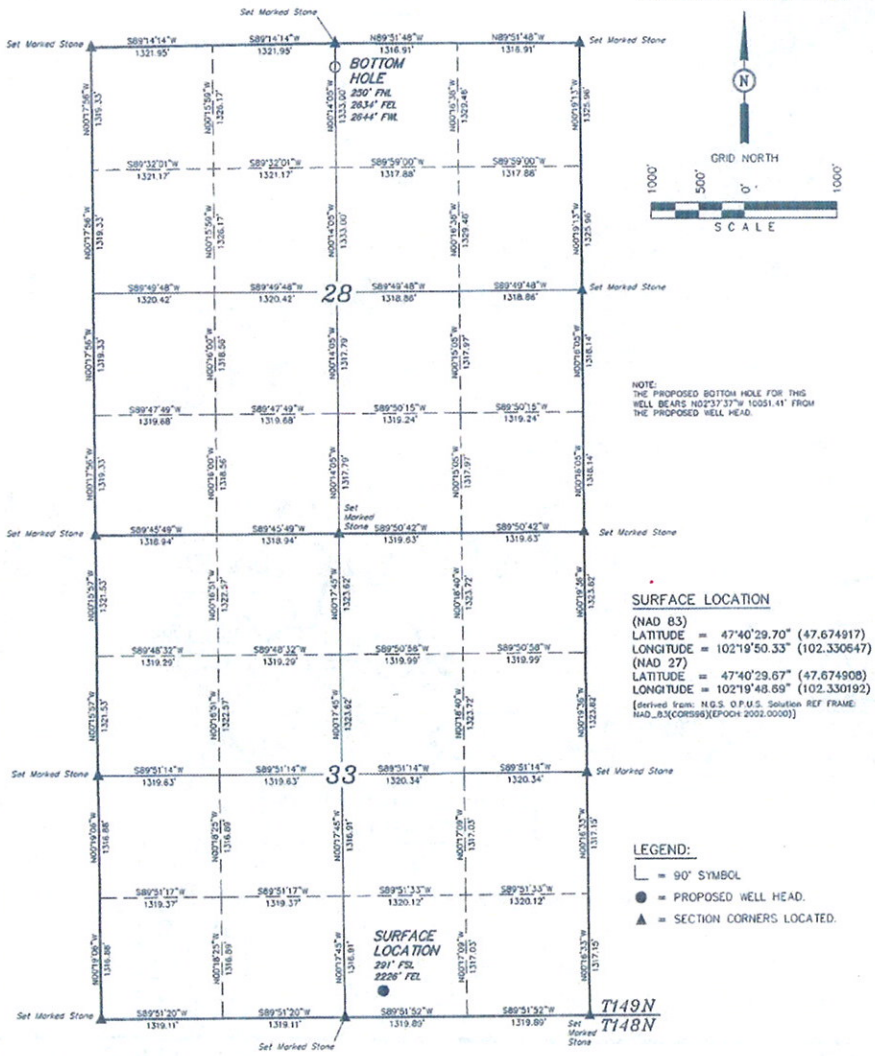
SCALE: 1" = 1000'	DATE SURVEYED: 07-29-10	DATE DRAWN: 08-10-10
PARTY: D.M. E.A. F.M.	REFERENCES: G.L.O. PLAT	
WEATHER: WARM	FILE: XTO ENERGY, INC	

XTO ENERGY, INC.

Well location, FBIR GRINNELL #34x-33, located as shown in the SW 1/4 SE 1/4 of Section 33, T149N, R91W, 5th P.M., Dunn County, North Dakota.

SECTION BREAKDOWN
T149N, R91W, 5th P.M.

VERTICAL CONTROL DATUM: NAVD88



NOTE:
THE PROPOSED BOTTOM HOLE FOR THIS WELL BEARS N02°37'37"W 10051.41' FROM THE PROPOSED WELL HEAD.

SURFACE LOCATION

(NAD 83)
LATITUDE = 47°40'29.70" (47.674917)
LONGITUDE = 102°19'50.33" (102.330647)
(NAD 27)
LATITUDE = 47°40'29.67" (47.674908)
LONGITUDE = 102°19'48.69" (102.330192)
[derived from: N.G.S. O.P.U.S. Solution REF FRAME: NAD_83(CORS96)(EPOCH 2002.0000)]

LEGEND:

- └ = 90° SYMBOL
- ● = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.

CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

TROY JENSEN
REGISTERED LAND SURVEYOR
4654
NORTH DAKOTA

REGISTERED LAND SURVEYOR
REGISTRATION NO. 4654
STATE OF NORTH DAKOTA

UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(435) 789-1017

SCALE: 1" = 1000'	DATE SURVEYED: 07-09-10	DATE DRAWN: 08-10-10
PARTY: D.M. E.W. P.M.	REFERENCES: G.L.O. PLAT	
WEATHER: WARM	FILE: XTO ENERGY, INC.	

LEGEND:

PROPOSED LOCATION

N

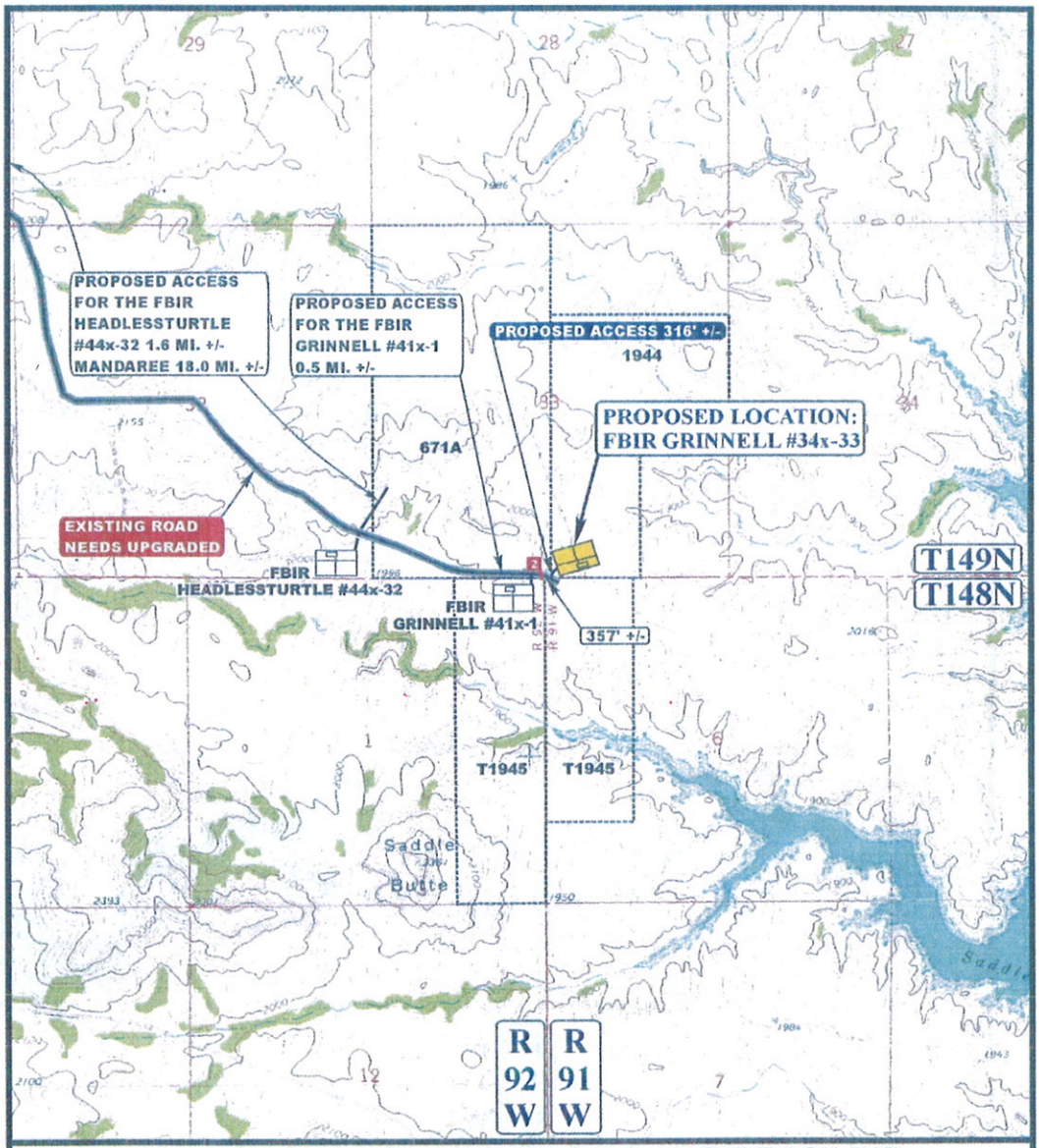
XTO ENERGY, INC.

FBIR GRINNELL #34x-33
SECTION 33, T149N, R91W, 5th P.M.
SW 1/4 SE 1/4

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

TOPOGRAPHIC MAP | 06 MONTH | 29 DAY | 10 YEAR | A TOPO

SCALE: 1:100,000 | DRAWN BY: J.L.G. | REV: 09-07-10 J.J.



LEGEND:

EXISTING ROAD

PROPOSED ACCESS ROAD

1 18" CMP REQUIRED 2 INSTALL CATTLEGUARD

N

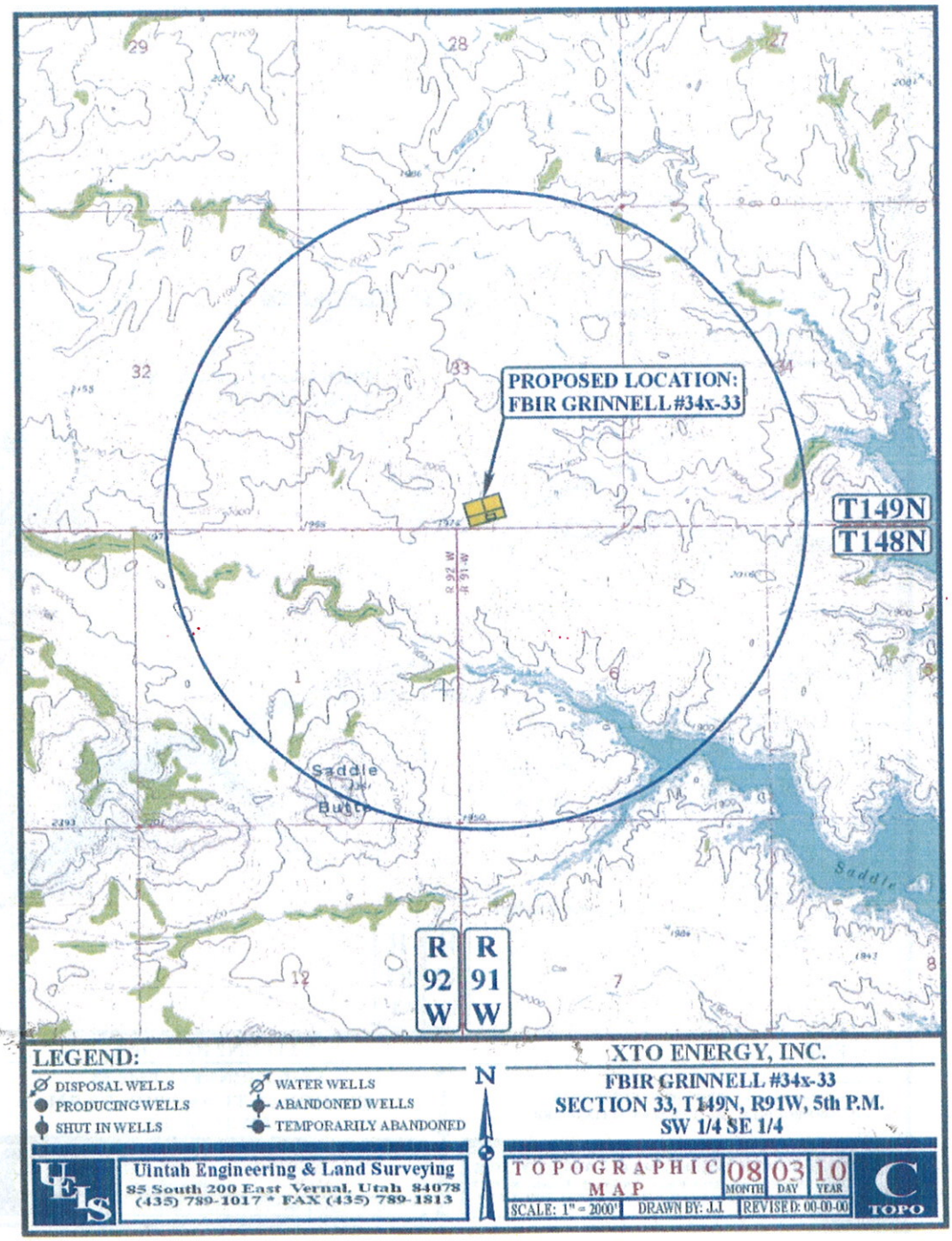
XTO ENERGY, INC.

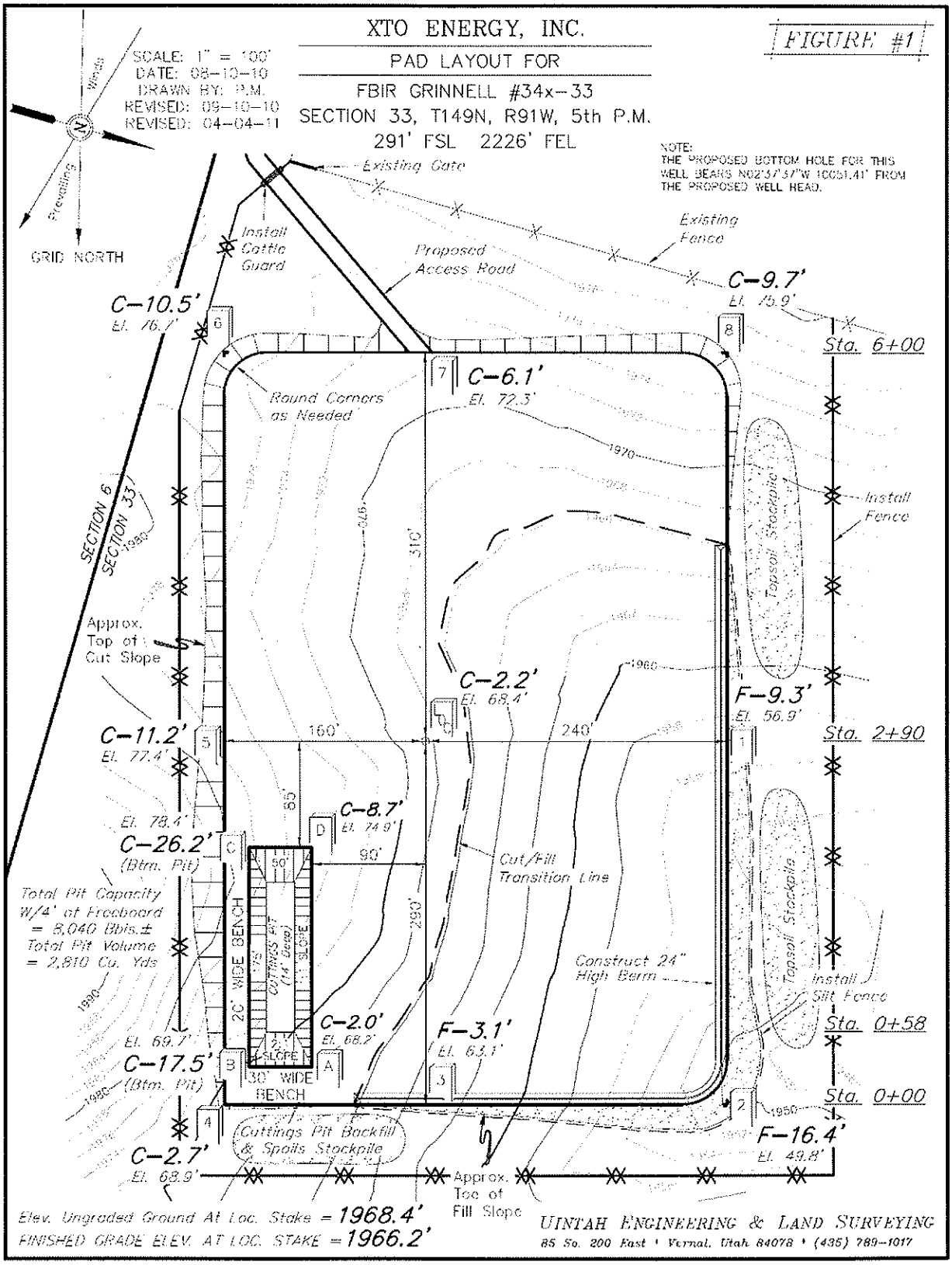
FBIR GRINNELL #34x-33
SECTION 33, T149N, R91W, 5th P.M.
SW 1/4 SE 1/4

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

ACCESS ROAD MAP | 06 MONTH | 29 DAY | 10 YEAR | B TOPO

SCALE: 1" = 2000' | DRAWN BY: J.L.G. | REV: 09-10-10 J.J.


PROPOSED LOCATION:
FBIR GRINNELL #34x-33
T149N
T148N
R 92 W
R 91 W
Saddle
Butte
Saddle
LEGEND:
DISPOSAL WELLS
PRODUCING WELLS
SHUT IN WELLS
WATER WELLS
ABANDONED WELLS
TEMPORARILY ABANDONED
N
XTO ENERGY, INC.
FBIR GRINNELL #34x-33
SECTION 33, T149N, R91W, 5th P.M.
SW 1/4 SE 1/4
Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813
TOPOGRAPHIC MAP
08 MONTH
03 DAY
10 YEAR
SCALE: 1" = 2000'
DRAWN BY: J.L.
REVISED: 00-00-00
C TOPO


XTO ENERGY, INC.
PAD LAYOUT FOR
FBIR GRINNELL #34x-33
SECTION 33, T149N, R91W, 5th P.M.
291' FSL 2226' FEL
FIGURE #1
SCALE: 1" = 100'
DATE: 08-10-10
DRAWN BY: P.M.
REVISED: 09-10-10
REVISED: 04-04-11
Winds
Prevailing
GRID NORTH
NOTE:
THE PROPOSED BOTTOM HOLE FOR THIS WELL BEARS N02°37'37"W 10051.41' FROM THE PROPOSED WELL HEAD.
Existing Gate
Existing Fence
Install Cattle Guard
Proposed Access Road
C-9.7'
El. 75.9'
C-10.5'
El. 76.7'
Sta. 6+00
C-6.1'
El. 72.3'
Round Corners as Needed
SECTION 6
SECTION 33
Install Fence
Topsoil Stockpile
Approx. Top of Cut Slope
C-2.2'
El. 68.4'
F-9.3'
El. 56.9'
C-11.2'
El. 77.4'
160'
240'
Sta. 2+90
C-8.7'
El. 74.9'
El. 78.4'
C-26.2'
(Btm. Pit)
90'
Cut/Fill Transition Line
Total Pit Capacity W/4' of Freeboard = 8,040 Bbls.± Total Pit Volume = 2,810 Cu. Yds
20' WIDE BENCH
CUTTINGS PIT (14' Deep)
SLOPE
Construct 24" High Berm
Install Silt Fence
C-2.0'
El. 68.2'
F-3.1'
El. 63.1'
Sta. 0+58
El. 69.7'
C-17.5'
(Btm. Pit)
30' WIDE BENCH
Sta. 0+00
Cuttings Pit Backfill & Spoils Stockpile
F-16.4'
El. 49.8'
C-2.7'
El. 68.9'
Approx. Toe of Fill Slope
Elev. Ungraded Ground At Loc. Stake = 1968.4'
FINISHED GRADE ELEV. AT LOC. STAKE = 1966.2'
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

XTO ENERGY, INC.

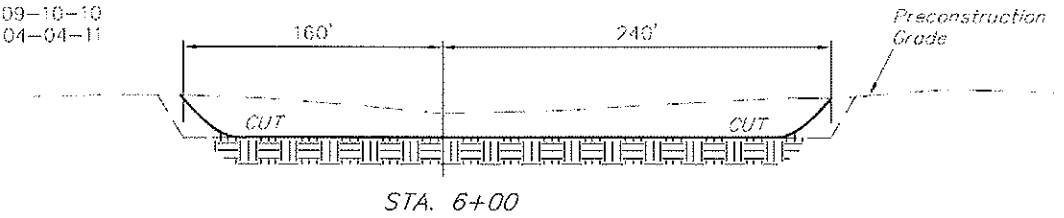
TYPICAL CROSS SECTION FOR

FBIR GRINNELL #34x-33
SECTION 33, T149N, R91W, 5th P.M.
291' FSL 2226' FEL

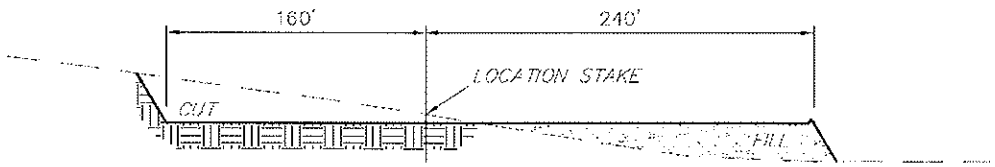
FIGURE #2

1" = 40'
X-Section Scale
1" = 100'

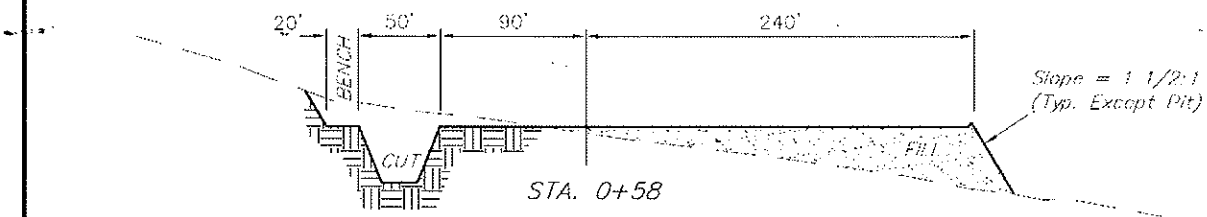
DATE: 08-10-10
DRAWN BY: P.M.
REVISED: 09-10-10
REVISED: 04-04-11



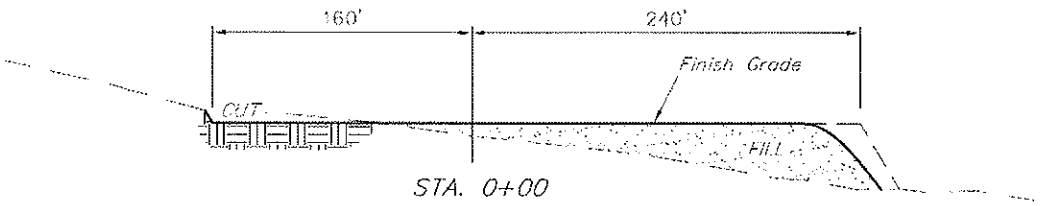
STA. 6+00



STA. 2+90



STA. 0+58



STA. 0+00

APPROXIMATE ACREAGES

WELL SITE DISTURBANCE = ± 6.618 ACRES
ACCESS ROAD DISTURBANCE = ± 1.019 ACRES
TOTAL = ± 7.637 ACRES

* *NOTE:*
FILL QUANTITY INCLUDES 5% FOR COMPACTION

APPROXIMATE YARDAGES

(6") Topsoil Stripping	=	*5,070* Cu. Yds.
Remaining Location	=	*26,260* Cu. Yds.
Cuttings Pit Cut	=	*2,810* Cu. Yds.
TOTAL CUT	=	*34,140* CU.YDS.
FILL	=	*27,660* CU.YDS.

EXCESS MATERIAL	=	*6,480* Cu. Yds.
Topsoil & Pit Backfill (1/2 Pit Vol.)	=	*6,480* Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	=	*0* Cu. Yds.

UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

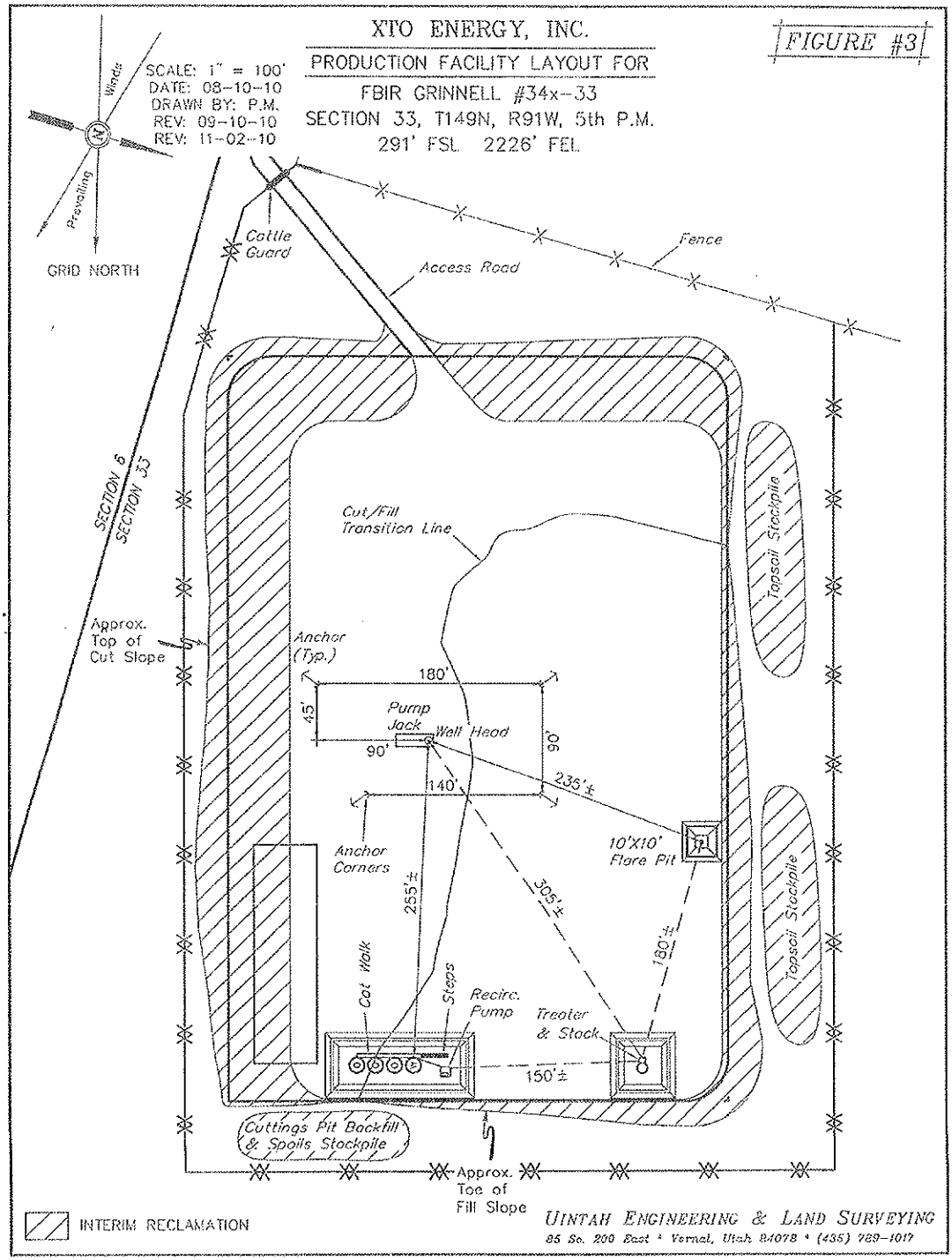
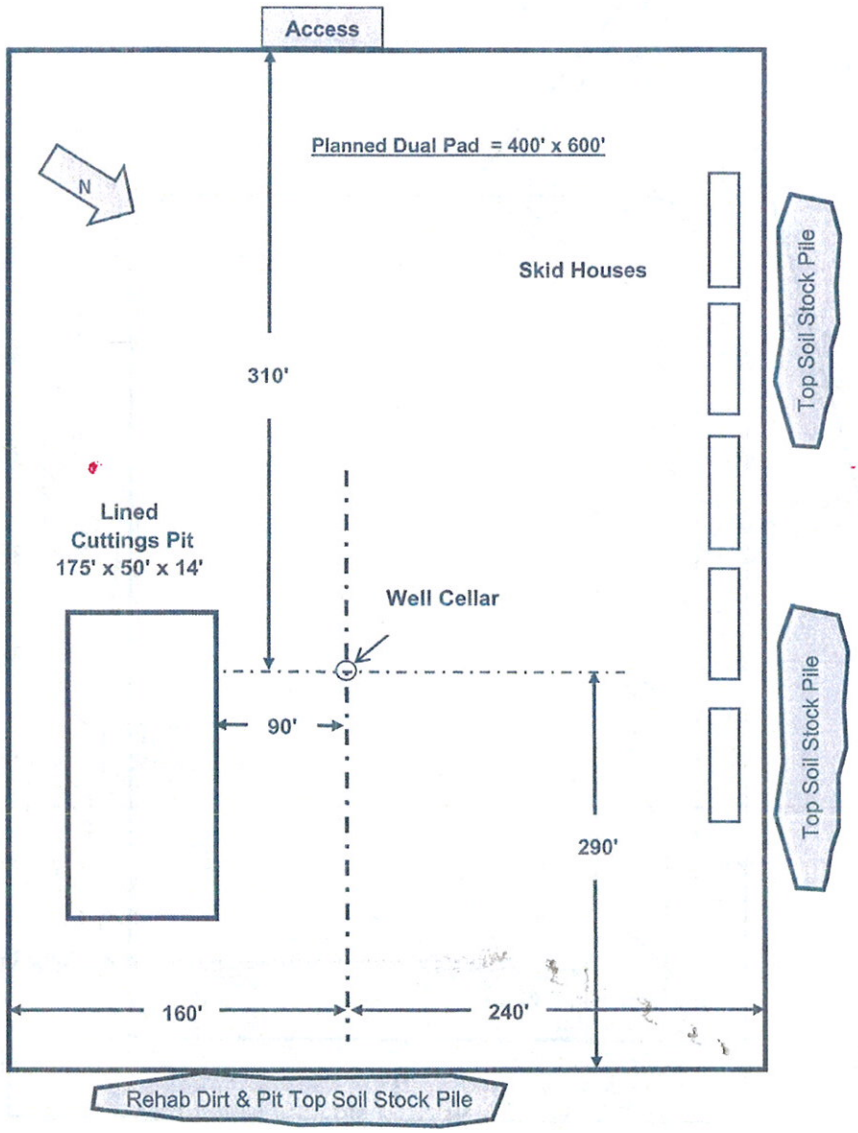

XTO ENERGY, INC.
PRODUCTION FACILITY LAYOUT FOR
FBIR GRINNELL #34x-33
SECTION 33, T149N, R91W, 5th P.M.
291' FSL 2226' FEL
FIGURE #3
SCALE: 1" = 100'
DATE: 08-10-10
DRAWN BY: P.M.
REV: 09-10-10
REV: 11-02-10
Winds
Prevailing
GRID NORTH
Cattle Guard
Access Road
Fence
SECTION 6
SECTION 33
Cut/Fill Transition Line
Topsoil Stockpile
Approx. Top of Cut Slope
Anchor (Typ.)
180'
45'
Pump Jack
Well Head
90'
90'
140'
235'±
Anchor Corners
10'X10' Flare Pit
255'±
305'±
180'±
Cat Walk
Steps
Recirc. Pump
Treater & Stack
150'±
Topsoil Stockpile
Cuttings Pit Backfill & Spoils Stockpile
Approx. Toe of Fill Slope
INTERIM RECLAMATION
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

FIGURE #4

XTO ENERGY
Location Schematic

FBIR Grinnell 34X-33
Location: SW SE Sec 33, 149N-91W
Footage: 291 ft FSL, 2226 ft FEL
Elev: Graded Pad 1966', KB 1989'
Dunn County, ND



XTO Energy, Inc.
CUTTINGS PIT LAYOUT

FBIR Grinnell 34X-33
Location: SW SE Sec 33, 149N-91W
Footage: 291 ft FSL, 2226 ft FEL
Elev: Graded Pad 1966', KB 1989'
Dunn County, ND

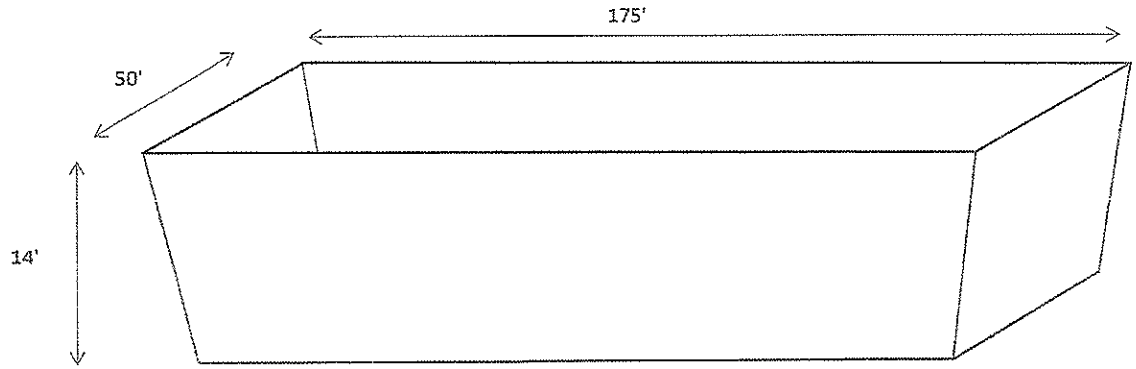


Figure #5

Figure # 6

LORTEX 12 MIL LINER

Woven Reinforced High Density Polyethylene Fabric Coated With Low Density Polyethylene

PHYSICAL PROPERTIES AND SPECIFICATIONS

CONSTRUCTION:	12xD6 count per square inch Warp 950 Denier @ 50 Fill 1900 Denier @ 100
FABRIC GRADE:	Industrial, Carbon Black
STANDARD COATING COLORS:	Black
STANDARD COATING THICKNESS:	12 Mils +/- .15 mil each side LDRE
TOTAL THICKNESS:	12 Mils +/- .5 mil
NOMINAL WEIGHT:	5.3 oz/ square yard
NOMINAL TENSILE STRENGTH:	160 lbs W x 140 lbs Fill ASTM 1682-64 (Grab)
TEAR STRENGTH:	46 lbs W x 49 lbs Fill ASTM 2261-71 (Tongue)
MULLEN BURST STRENGTH:	325 psi ASTM D751-73
HYDROSTATIC RESISTANCE:	125 psi ASTM D1682-63
FLEX ABRASION:	5000+ cycles W 5000+ cycles Fill ASTM D1175-71
PUNCTURE RESISTANCE:	40 pounds FTMS 101B method 2065
IDENTIFICATION:	Printed in white ink "12 Mil" on 36 inch repeat

XTO ENERGY, INC.

FBIR GRINNELL #34x-33

LOCATED IN DUNN COUNTY, NORTH DAKOTA
SECTION 33, T149N, R91W, 5th P.M.

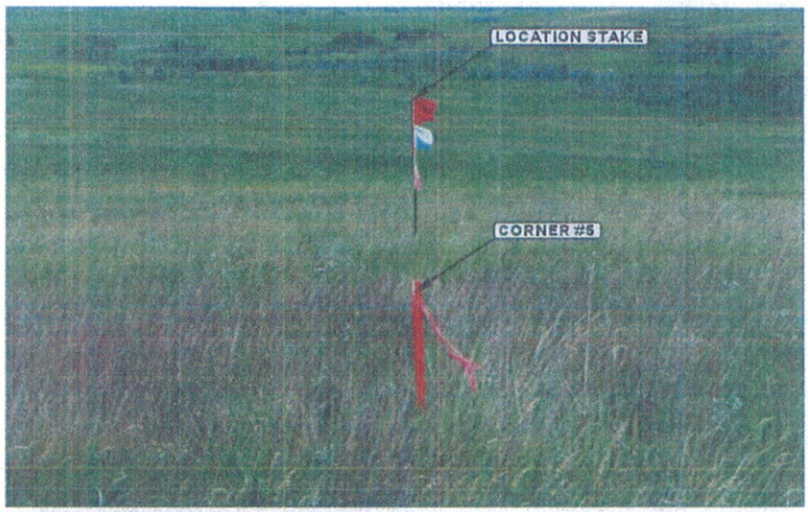


PHOTO: VIEW FROM CORNER #5 TO LOCATION STAKE

CAMERA ANGLE: NORTHWESTERLY

PHOTO: VIEW FROM BEGINNING OF PROPOSED ACCESS FOR FBIR HEADLESSTURTLE #44x-32

CAMERA ANGLE: EASTERLY

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813
- Since 1964 -

LOCATION PHOTOS	08 MONTH	03 DAY	10 YEAR	PHOTO
TAKEN BY: D.M.	DRAWN BY: J.J.	REVISED: 09-07-10		

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
7420A49835

6. If Indian, Allotee or Tribe Name
Three Affilliated Tribes

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
FBIR GeorgeBlackHawk 21X-6

2. Name of Operator XTO Energy, Inc.

9. API Well No.
33-025-01317

3a. Address 7114 W. Jefferson Ave., Suite 305
Denver, CO 80235

3b. Phone No. *(include area code)*
303.969.8280

10. Field and Pool, or Exploratory
Heart Butte - Bakken

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 621' FNL & 1766' FWL, Lot 3, Sec.6-148N-91W
At proposed prod. zone 985' FNL & 1993' FWL, Lot 3, Sec. 6-148N-92W

11. Sec., T. R. M. or Blk. and Survey or Area
6-148N-91W

14. Distance in miles and direction from nearest town or post office*

12. County or Parish
Dunn

13. State
ND

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any)
621'

16. No. of acres in lease
1280 Ac. Spacing Unit

17. Spacing Unit dedicated to this well
All of Sec. 6 & 7-148N-91W

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
n/a

19. Proposed Depth
19,272' MD
9938' TVD

20. BLM/BIA Bond No. on file
UTB000138

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
1974' GL; 1997' KB

22. Approximate date work will start*
08/01/2011

23. Estimated duration
45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature

Name *(Printed/Typed)*
J. Michael Warren

Date
03/09/2011

Title
Regulatory Supervisor

Approved by *(Signature)*

Name *(Printed/Typed)*

Date

Title

Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

PO Box 1589, Sidney, MT 59270

Drilling Plan - **Drill, Complete & Equip Single Lateral Wellbore in the Bakken**

Well Name and Location

FBIR GeorgeBlackHawk 21X-6

Location: NE NW Sec 6, 148N-91W
Footage: 621 ft FNL, 1766 ft FWL
Elev: Graded Pad 1974', KB 1997'
Dunn County, ND

Latitude	**47.672414**	**North**
Longitude	**102.325647**	**West**

Driving Directions

From Mandaree, ND: 15.3 mi E on BIA 12, 2.3 mi NE on BIA 13, 2.8 mi SE on existing road, then 455' NE into location

Drilling Rig Description

Rig	NABORS 109
Draw Works	Commander 650 A/C - 1,150 hp motor
Mast	DSI 136' Cantilever mast (550,000# - 12 lines)
Prime Movers	3 - Caterpillar 3512C - Kato 1100 KW gens
Pumps	2 - GD PZ-10 (independently driven)
BOPE	T3 6012 Type U 13-5/8" 5,000 psi single & dbl gate BOPs Hydril GX 13-5/8" 5,000 psi Annular BOP 4" x 5,000 psi manifold

Formation Tops	**TVD**	*Offset XTO Wells - none (yet)*
Base of Fox Hills	1,702	
Greenhorn	3,877	
Dakota Silt	4,594	Brackish Water
Dunham Salt	**5,992**	**(0 - 20')**
Spearfish	6,005	
Pine Salts	**absent**	
Minnekahta	6,249	
Opeche Salts	6,269	**(120 - 140')**
Minnelusa	6,693	soft/hard formation
Tyler	7,196	laminations can wipe
Kibbey Lime	7,625	out bit if drilled too aggressively
Charles	**7,785**	
Base Last Salt	**8,284**	
Mission Canyon	8,460	Possible losses
Lodgepole	9,060	
Upper Bakken Shale	9,897	
Middle Bakken	9,915	
Target - Bakken	**9,938**	

Logging, DST and Coring Program

1. A mud log will be run from Base of Last Salt to TD & on all laterals: Mudlog to include: total gas chromatograph and sample cuttings - 10' sample intervals in vertical hole & 30' intervals in laterals. A CBL/GR log will be run from deepest free-fall depth in 7 inch casing to surface. An MWD GR/ROP log will also be run from KOP (where the CBL will tie into) to TD of lateral.
2. *Open hole logs are not anticipated for this well (if this well is drilled after the FBRI Grinnell 34X-33).*
3. No DST's are planned at this time.

H2S

A minor H2S show may be present from below Base Last Salt to KOP. If noticed, RU H2S safety trailer etc.

Maximum Formation Pressure and Temp

1. Normal formation pressure gradient is expected (up to 0.5 psi/ft or 9.6 ppg) from surface to the Bakken Shale. The Bakken Shale, Bakken Middle Member, and Three Forks may be over pressured up as much as 0.66 psi/ft (12.8 ppg).
2. The maximum anticipated BHT is **250** degrees F. or less.

BOP Equipment Requirements

See attached diagram detailing BOPE specifications.

1. Rig will be equipped with upper and lower kelly cocks with handles available.
2. Inside BOP and TIW valves will be available to use on all sizes and threads of DP used on well.
3. BOP accumulator will have enough capacity to close HCR valve, close all rams plus annular preventer & retain minimum of 200 psi above precharge on the closing manifold without the use of closing pumps. The fluid reservoir capacity shall be at least double the usable fluid volume of the accumulator system capacity & the fluid level shall be mainatained at manufacturer's recommendation. There will be 2 additional sources of power for the closing pumps (electric and air). Sufficient N2 bottles will be available and will be recharged when pressure falls below manufacturer's minimum

4. BOP ram preventers will be tested to 5,000 psi using a test plug when initially installed and after 7 inch casing is nippled up and at 30 day intervals. Test BOP & casing strings to 1,500 psi just prior to drilling out 9-5/8" and 7" casing shoes. Function test rams and hydraulically operated remote choke line valve daily (preferably at every crew change).
5. Remote valve for BOP rams, HCR & choke shall be placed in a location that is readily available to Driller. The remote BOP valve shall be capable of closing and opening the rams.
6. Hand wheels on BOP shall be equipped with locking devices. A locking device shall be placed on annular preventer line valve & must be locked in the open position. This lock shall only be removed when the closing unit is inoperative.

Drilling Fluid and Related Equipment

1. Pumps shall be equipped with stroke counters with displays located in dog house. Slow pump speed shall be recorded on drilling report daily after mudding up.
2. A Pit Volume Totalizer will be installed and the readout will be displayed in the dog house.
3. Gas detecting equipment (for a chromatagraph) will be installed at shaker. Readouts will be available in dog house and in geologist trailer.
4. In the event gas flow becomes an issue. A flare pit shall be constructed not less than 100' from wellhead & 50' from cuttings handling area. Lines to the flare pit will be straight runs (staked down) and turns will utilize targeted tees. Flare pit will be located down wind as much as possible. An electronic ignitor will be used along with a propane line to provide for a continuous flare pilot.

Drilling Plan

Section 1 - Surface Casing>> **Surface to: 1,820** ***(Surface Casing Depth + 20')***

Conductor:	16" set at 45' - 80' (depending on gravel or coal depths)
Hole Size:	13-1/2"
Mud:	Fresh Water
Bits:	Type 1 mill tooth
Procedure:	Set 16" conductor pipe into firm clay (45'-80'). Drill to casing setting depth (plus necessary rathole). *After reaching TD, run gyro directional survey (inclination and azimuth at 100' stations).* Run casing and cement. Weld on C22 5M psi casing head. NU 11" x 5M psi drilling spool. NU 5M psi BOPE. Test to 5,000 psi.
Casing:	9-5/8" 36# K-55 8rd ST&C R3 SMLS - New. **Set at: 1,800 ft**
Centralizers:	2 turbolizers per jt on 1st 3 jts (stop banded 10' from each collar) & 1 regular centralizer per 5 jts to surface.
Cement:	Lead Slurry: 330 **Sacks** 50:50 Poz:Class C w/ defoamer, water loss & 1/8 #/sk polyflake. Mixed at 17.83 gps wtr, 2.93 cf/sk yield & 11.5 ppg. Tail Slurry: 200 **Sacks** Class C with 3% salt & 1/8 #/sk polyflake. Mixed at 7.37 gps wtr, 1.48 cf/sk yield and 14.2 ppg. ***Note:** Volumes calculated assuming 35% excess over 13-1/2" hole size.*

Section 2 - Surf Csg Shoe to KOP>> **1,800 to: 9,529**

Hole Size:	8-3/4"
Mud	Invert - 80% Diesel / 20% Salt Water. Mud Weight 9.5 - 9.7 PPG. ES 500-600.
Bits	PDC bits with mud motors and MWD. Avoid RPM's at bit > 230 in fast hole section. ***Jet bits with 12's or 13's max.*** *Recommend drilling out with Smith MDSi616BPX jetted with 12's and drilling to top of Charles (or when ROP becomes unbearable). Then recommend Hughes Q506FX (Part No. X14533R or X13904) as the 2nd bit, jetted with 13's.*
Procedure:	Drill w / PDC bit & mud motor. Steer as needed with MWD or SWD. Survey every 90'. Hold deviation to 2 deg max from surf csg shoe to ~6,000'; then ~3 deg max to ~8,000'; then ~4 deg max to KOP. Condition hole for logs (if needed). TOH
Logs:	Mudlogger will start at Base of Last Salt.
if 1st well drilled on pad	GR, Resisitivity, BHC Sonic From TD To Surf Csg Density - Neutron Porosity From TD To 50' above Tyler

Section 3 - Drill Curve (14 Degree/100')>> **9,529 to: 10,212 7" Casing Point**

Hole Size:	8-3/4"
Mud:	Invert - 80% Diesel / 20% Salt Water. Mud weight 9.5 - 9.7 PPG. ES 500-600.
Bits:	*Type 2 PDC (Halliburton FXD55M or Reed MSF613DC2A) jetted with 18's. Preferred motor is a Wenzel 2.38 deg, fixed bend, 5/6 lobe, 5 stage, 0.35 rev/gal motor equipped with short (+/- 5') bit-to-bend*
Procedure:	Drill Curve per directional plan (maximum survey interval is 30').
Casing:	Set 7" 29# P-110 & MS-110 LT&C and 32# P-110 (100' above & below salts) at **10,192 ft**

Anticipated Casing Design to facilitate fracture stimulating down casing

Top	Btm	Ftg		
0	5,892	5,892	7" 29# P-110 LT&C	Surf to 120' above Dunham salt
5,892	6,793	901	7" 32# P-110 LT&C	120' above Dunham to 120' below base of Pine/Opeche salts
6,793	7,685	892	7" 29# P-110 LT&C	120' below base of Pine/Opeche to 120' above Charles salt
7,685	8,384	699	7" 32# P-110 LT&C	120' above Charles salt to 120' below Base of Last Salt
8,384	9,629	1,245	7" 29# MS-110 LT&C	120' below Base of Last Salt 100' below KOP
9,629	10,192	563	7" 29# P-110 LT&C	100' below KOP to TD

Centralizers:	2 stand-off bands per jt on btm 3 jts (banded 10' from collars). 1 stand-off band on every other jt from curve landing depth through KOP. 1 turbolizer centralizer per jt from 100' above to 100' below each salt section. Then, 1 regular centralizer per 6 jts up to anticipated cement top.
Cement:	**Lead** Slurry: 177 **Sacks** *(est. TOC ~ 200' above Mowry)* High-early strength 50:50 Pozmix with defoamer, fluid loss additive, dispersant, 0.2% thixotropic additive & 1/8 #/sk polyflakes. Mixed at 14.45 gps, 2.51 cf/sk, 11.8 ppg

1st Tail Slurry: 509 **Sacks** *(est. TOC 200' above Dunham Salt)*

50:50 Pozmix with defoamer, fluid loss additive, 0.25% retarder, 0.2% thixotropic additive, 1/8#/sk polyflakes. Mixed at 6.38 gal/sk, 1.39 cf/sk, 14.2 ppg

2nd Tail Slurry: 302 **Sacks** *(est.TOC at top of Mission Canyon)*

Class G with expanding agent, friction reducer, fluid loss additive, 35% silica flour, 0.2% retardor, 1/8 #/sk polyflakes. Mixed at 6.49 gal/sk, 1.37 cf/sk, 15.6 ppg.

NOTE: Slurry volumes are based on 9" hole + 50% excess (≈ 8.75" hole + 75% excess)

Logs: MWD GR/ROP. Mud log.

Section 4 - Lateral #1>> **10,192 to: 19,272** ***TD (MD)***

Hole Size: 6"

Mud: Salt Water Mud. Typically 9.5-9.7 ppg using NaCL. If conditions warrant use CaCl brine (up to 11.2 ppg).

Bits: PDC bits.

Procedure: TIH w/bit and directional tools. Drill open hole lateral per directional plan to TD target. Max survey interval in lateral is 90'. TOH with DP & BHA. Run **4 1/2" 11.6# J-55 BT** liner w/ pre-drilled, 0.5" holes per 2 ft below bottom-most external swell pkr, followed by **13.5# P-110 BT** blank pipe with external swell packers (evenly spaced in open hole, unless natural fractures were encountered while drilling) from +/-TD to last swell packer in open hole. Run **4.5" 13.5# P-110** Tenaris-Blue casing above last swell packer in the open hole to +/- KOP, with a final swell packer located immediately below the liner hanger.
Once liner is run, circulate out oil & gas and spot FW in lateral to activate swell pkrs. Drop ball & wait +/- 1 hr for it to seat.
Set liner hanger & top pkr - test to +/- 5,000 psi. PU & stack-off +/- 40 k-lbs over/under string weight to confirm liner hanger is set. Rotate off of liner hanger. Circulate bottoms-up. POH LD liner setting tools.

Liner:

Top:	Btm:
9,529 - ***KOP***	**19,272** ***<-- spaced out as close to TD as possible***

Finalize Well >>>> Set wireline-set, tubing-retreivable bridge plug with BHP gauges & top blanking plug in 1st or 2nd joint of 4-1/2" liner below liner top. Run CBL. Displace vertical section of wellbore above plug with clean brine (the lower the MW, the better). LD DP. ND BOP & NU tree. RDMO.

Prepared By: Ross H. Lubbers - 02/11/11
Updated:

XTO ENERGY

Well Construction Diagram

FBIR GeorgeBlackHawk 21X-6
Location: NE NW Sec 6, 148N-91W
Footage: 621 ft FNL, 1766 ft FWL
Elev: Graded Pad 1974', KB 1997'
Dunn County, ND

From Mandaree, ND: 15.3 mi E on BIA 12, 2.3 mi NE on BIA 13, 2.8 mi SE on existing road, then 455' NE into location

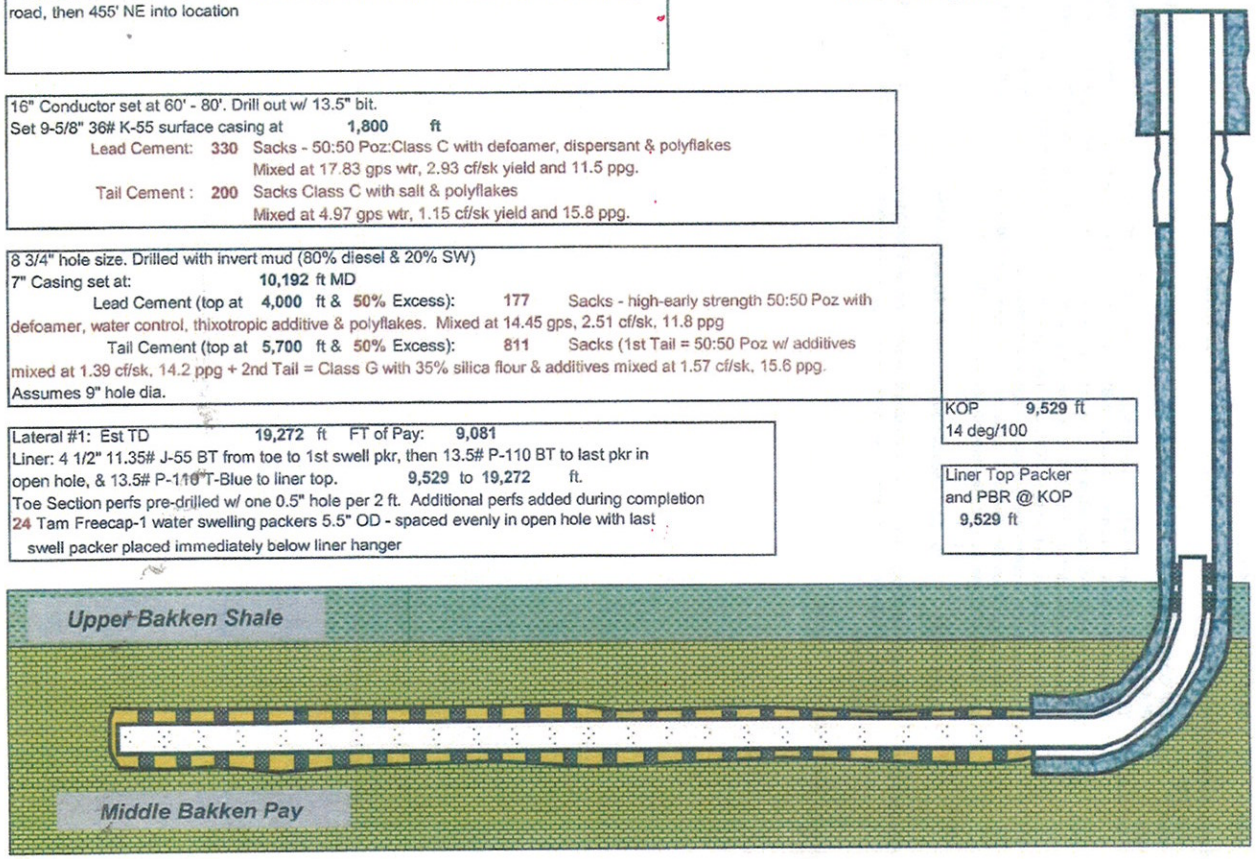
16" Conductor set at 60' - 80'. Drill out w/ 13.5" bit.
Set 9-5/8" 36# K-55 surface casing at **1,800** ft
Lead Cement: **330** Sacks - 50:50 Poz:Class C with defoamer, dispersant & polyflakes
Mixed at 17.83 gps wtr, 2.93 cf/sk yield and 11.5 ppg.
Tail Cement : **200** Sacks Class C with salt & polyflakes
Mixed at 4.97 gps wtr, 1.15 cf/sk yield and 15.8 ppg.

8 3/4" hole size. Drilled with invert mud (80% diesel & 20% SW)
7" Casing set at: **10,192** ft MD
Lead Cement (top at **4,000** ft & **50%** Excess): **177** Sacks - high-early strength 50:50 Poz with defoamer, water control, thixotropic additive & polyflakes. Mixed at 14.45 gps, 2.51 cf/sk, 11.8 ppg
Tail Cement (top at **5,700** ft & **50%** Excess): **811** Sacks (1st Tail = 50:50 Poz w/ additives mixed at 1.39 cf/sk, 14.2 ppg + 2nd Tail = Class G with 35% silica flour & additives mixed at 1.57 cf/sk, 15.6 ppg.
Assumes 9" hole dia.

Lateral #1: Est TD **19,272** ft FT of Pay: **9,081**
Liner: 4 1/2" 11.35# J-55 BT from toe to 1st swell pkr, then 13.5# P-110 BT to last pkr in open hole, & 13.5# P-110 T-Blue to liner top. **9,529** to **19,272** ft.
Toe Section perfs pre-drilled w/ one 0.5" hole per 2 ft. Additional perfs added during completion
24 Tam Freecap-1 water swelling packers 5.5" OD - spaced evenly in open hole with last swell packer placed immediately below liner hanger

KOP **9,529** ft
14 deg/100

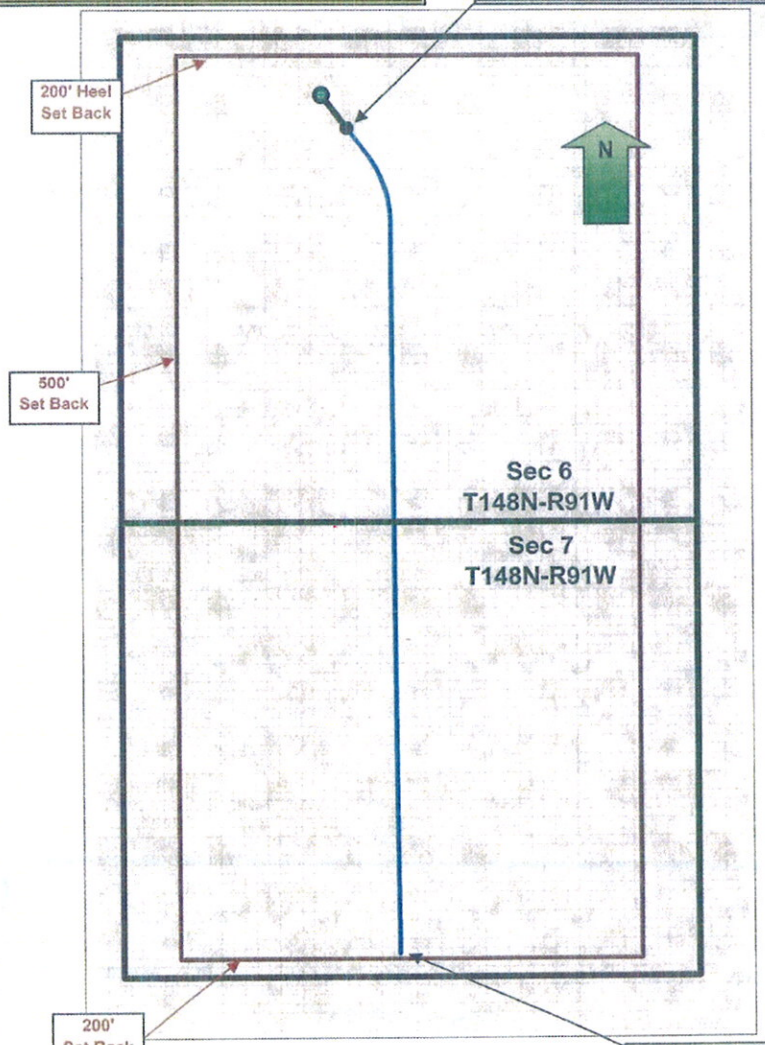
Liner Top Packer and PBR @ KOP
9,529 ft



DIRECTIONAL DRILLING PLAN
FBIR GeorgeBlackHawk 21X-6
Location: NE NW Sec 6, 148N-91W
Footage: 621 ft FNL 1766 ft FWL
Elev: Graded Pad 1974', KB 1997'
Dunn County, ND
Scale: 1 sq = 100'

7" Casing:	10,192	FT MD	
BHL:	1,993 ft FWL	985 ft FNL	
Coord:	227 E	364 S	
Az to Shoe:	148.00	Deg	

XTO ENERGY

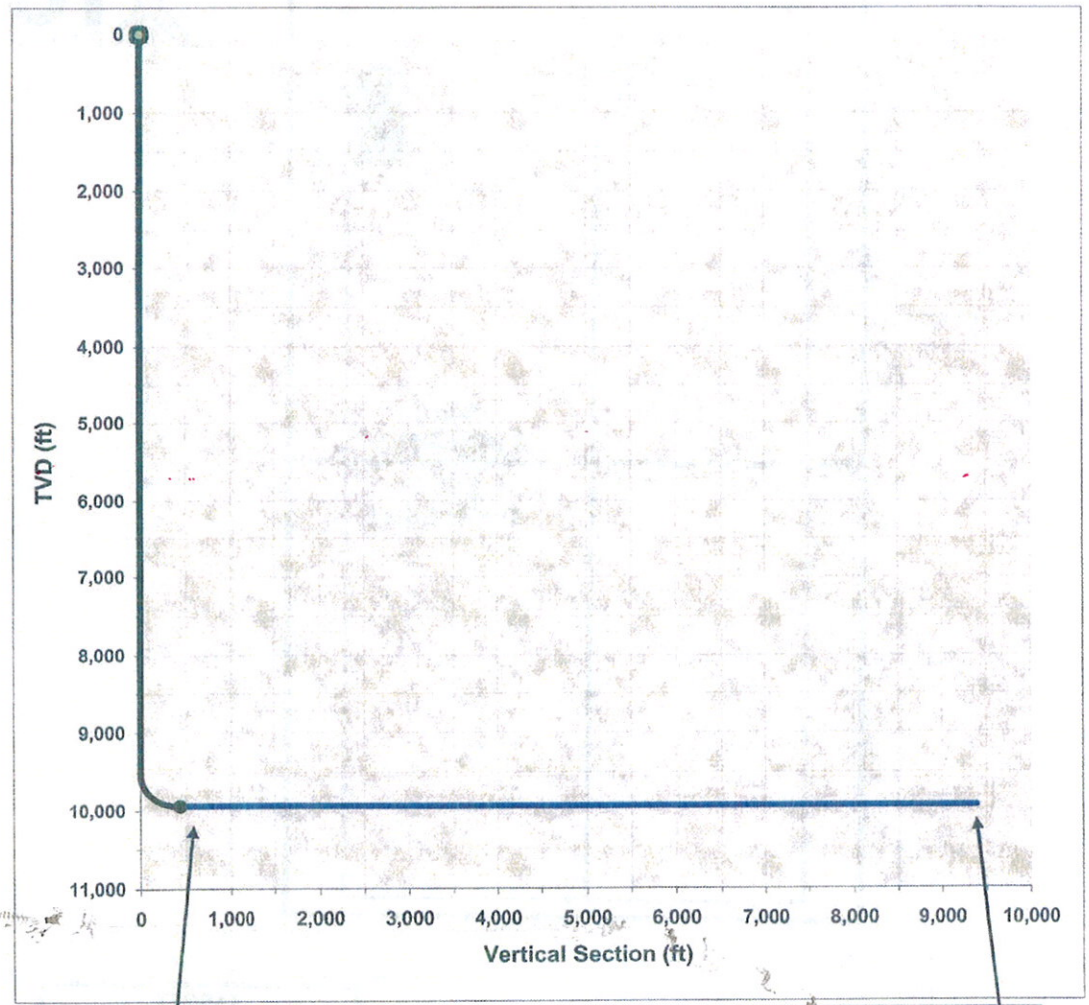


TARGET			
TMD:	19,272 ft		
TVD:	9,938 ft		
9,358	SOW	651	EOW
250	FSL	2,388	FWL
WH to BH Target Az		176.02	

DIRECTIONAL DRILLING PLAN
FBIR GeorgeBlackHawk 21X-6

Location: NE NW Sec 6, 148N-91W
Footage: 621 ft FNL 1766 ft FWL
Elev: Graded Pad 1974', KB 1997'
Dunn County, ND
Scale: 1 sq = 500'

XTO ENERGY



7" Casing:	10,192	FT MD	
BHL:	1,993 ft FWL	985 ft FNL	
Coord:	227 E	364 S	
Az to Shoe:	148.00	Deg	

TARGET			
TMD:	19,272 ft		
TVD:	9,938 ft		
9,358	SOW	651	EOW
250	FSL	2,388	FWL
WH to BH Target Az		176.02	

HORIZONTAL DRILLING PLAN - LATERAL NO.1

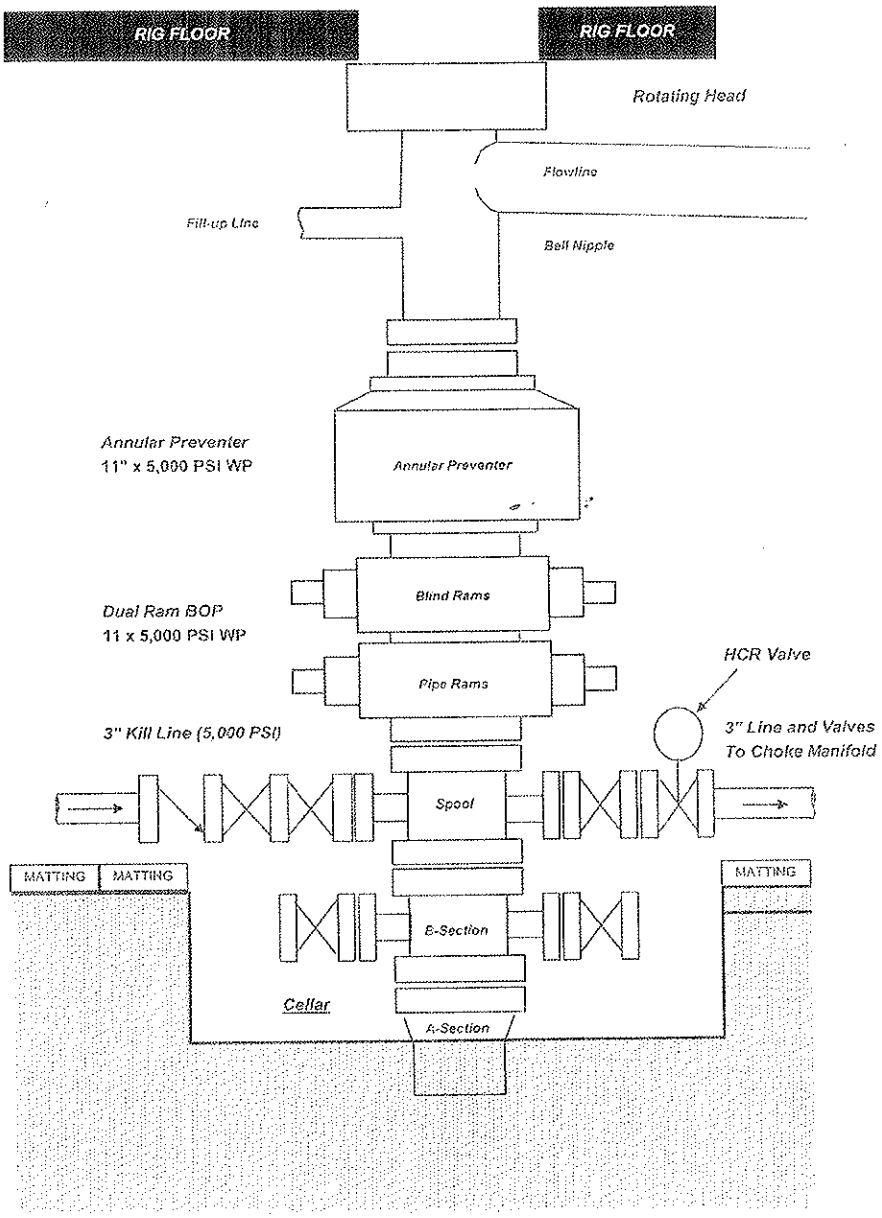
Company	XTO Energy, Inc		Target Inclination	90	
Well	FBIR GeorgeBlackHawk 21X-6		Magnetic Declination		
Build Rate	14.00		Target TVD	9,938	
Relative Turn Direction	R		Target Azimuth	176.02	Initial Azimuth
Turn Rate - Deg/100	4.00	31.66 Total Turn	Target Coordinates from Surf Locn	651 E	9358 S	9,381 VS

Date	No.	DEPTH	INC.	AZM	C.L.	T.V.D.	V.S.	N/S	E/W	DLS	B./D.	Walk	BRN
	1	0				0.00	0.00	0.00 N	0.00 E	0.00			0.00
KOP1	2	9,529	0.00	0.00	9529	9528.74	0.00	0.00 N	0.00 E	0.00	0.00	0.00	14.00
	3	9,542	1.80	148.00	12.9	9541.60	0.20	0.17 S	0.11 E	14.00	14.00	1151.11	14.00
	4	9,554	3.60	148.00	12.9	9554.44	0.81	0.68 S	0.43 E	14.00	14.00	0.00	14.00
	5	9,567	5.40	148.00	12.9	9567.26	1.82	1.54 S	0.96 E	14.00	14.00	0.00	14.00
	6	9,580	7.20	148.00	12.9	9580.04	3.23	2.74 S	1.71 E	14.00	14.00	0.00	14.00
	7	9,593	9.00	148.00	12.9	9592.77	5.04	4.27 S	2.67 E	14.00	14.00	0.00	14.00
	8	9,606	10.80	148.00	12.9	9605.43	7.25	6.15 S	3.84 E	14.00	14.00	0.00	14.00
	9	9,619	12.60	148.00	12.9	9618.02	9.86	8.36 S	5.22 E	14.00	14.00	0.00	14.00
	10	9,632	14.40	148.00	12.9	9630.52	12.86	10.90 S	6.81 E	14.00	14.00	0.00	14.00
	11	9,644	16.20	148.00	12.9	9642.92	16.25	13.78 S	8.61 E	14.00	14.00	0.00	14.00
	12	9,657	18.00	148.00	12.9	9655.21	20.03	16.99 S	10.61 E	14.00	14.00	0.00	14.00
	13	9,670	19.80	148.00	12.9	9667.37	24.19	20.52 S	12.82 E	14.00	14.00	0.00	14.00
	14	9,683	21.60	148.00	12.9	9679.40	28.74	24.37 S	15.23 E	14.00	14.00	0.00	14.00
	15	9,696	23.40	148.00	12.9	9691.28	33.66	28.54 S	17.84 E	14.00	14.00	0.00	14.00
	16	9,709	25.20	148.00	12.9	9703.00	38.95	33.03 S	20.64 E	14.00	14.00	0.00	14.00
	17	9,722	27.00	148.00	12.9	9714.54	44.61	37.83 S	23.64 E	14.00	14.00	0.00	14.00
	18	9,734	28.80	148.00	12.9	9725.90	50.62	42.93 S	26.82 E	14.00	14.00	0.00	14.00
	19	9,747	30.60	148.00	12.9	9737.07	56.99	48.33 S	30.20 E	14.00	14.00	0.00	14.00
	20	9,760	32.40	148.00	12.9	9748.03	63.71	54.03 S	33.76 E	14.00	14.00	0.00	14.00
	21	9,773	34.20	148.00	12.9	9758.78	70.77	60.01 S	37.50 E	14.00	14.00	0.00	14.00
	22	9,786	36.00	148.00	12.9	9769.30	78.16	66.28 S	41.42 E	14.00	14.00	0.00	14.00
	23	9,799	37.80	148.00	12.9	9779.58	85.88	72.83 S	45.51 E	14.00	14.00	0.00	14.00
	24	9,812	39.60	148.00	12.9	9789.61	93.92	79.65 S	49.77 E	14.00	14.00	0.00	14.00
	25	9,824	41.40	148.00	12.9	9799.39	102.27	86.73 S	54.19 E	14.00	14.00	0.00	14.00
	26	9,837	43.20	148.00	12.9	9808.90	110.92	94.07 S	58.78 E	14.00	14.00	0.00	14.00
	27	9,850	45.00	148.00	12.9	9818.13	119.87	101.65 S	63.52 E	14.00	14.00	0.00	14.00
	28	9,863	46.80	148.00	12.9	9827.08	129.10	109.48 S	68.41 E	14.00	14.00	0.00	14.00
	29	9,876	48.60	148.00	12.9	9835.73	138.61	117.55 S	73.45 E	14.00	14.00	0.00	14.00
	30	9,889	50.40	148.00	12.9	9844.08	148.38	125.84 S	78.63 E	14.00	14.00	0.00	14.00
	31	9,902	52.20	148.00	12.9	9852.12	158.42	134.35 S	83.95 E	14.00	14.00	0.00	14.00
	32	9,914	54.00	148.00	12.9	9859.84	168.70	143.07 S	89.39 E	14.00	14.00	0.00	14.00
	33	9,927	55.80	148.00	12.9	9867.23	179.22	151.99 S	94.97 E	14.00	14.00	0.00	14.00
	34	9,940	57.60	148.00	12.9	9874.29	189.96	161.10 S	100.66 E	14.00	14.00	0.00	14.00
	35	9,953	59.40	148.00	12.9	9881.01	200.93	170.40 S	106.47 E	14.00	14.00	0.00	14.00
	36	9,966	61.20	148.00	12.9	9887.38	212.09	179.87 S	112.39 E	14.00	14.00	0.00	14.00
	37	9,979	63.00	148.00	12.9	9893.39	223.45	189.50 S	118.41 E	14.00	14.00	0.00	14.00
	38	9,992	64.80	148.00	12.9	9899.05	235.00	199.29 S	124.53 E	14.00	14.00	0.00	14.00
	39	10,004	66.60	148.00	12.9	9904.34	246.72	209.23 S	130.74 E	14.00	14.00	0.00	14.00
	40	10,017	68.40	148.00	12.9	9909.26	258.60	219.30 S	137.03 E	14.00	14.00	0.00	14.00
	41	10,030	70.20	148.00	12.9	9913.81	270.62	229.50 S	143.40 E	14.00	14.00	0.00	14.00
	42	10,043	72.00	148.00	12.9	9917.97	282.79	239.82 S	149.85 E	14.00	14.00	0.00	14.00
	43	10,056	73.80	148.00	12.9	9921.75	295.07	250.24 S	156.36 E	14.00	14.00	0.00	14.00
	44	10,069	75.60	148.00	12.9	9925.14	307.47	260.76 S	162.93 E	14.00	14.00	0.00	14.00
	45	10,082	77.40	148.00	12.9	9928.14	319.98	271.36 S	169.56 E	14.00	14.00	0.00	14.00
	46	10,094	79.20	148.00	12.9	9930.75	332.56	282.03 S	176.23 E	14.00	14.00	0.00	14.00
	47	10,107	81.00	148.00	12.9	9932.96	345.23	292.77 S	182.94 E	14.00	14.00	0.00	14.00
	48	10,120	82.80	148.00	12.9	9934.77	357.96	303.57 S	189.68 E	14.00	14.00	0.00	14.00
	49	10,133	84.60	148.00	12.9	9936.18	370.74	314.41 S	196.45 E	14.00	14.00	0.00	14.00
	50	10,146	86.40	148.00	12.9	9937.19	383.55	325.28 S	203.25 E	14.00	14.00	0.00	14.00
	51	10,159	88.20	148.00	12.9	9937.80	396.40	336.17 S	210.05 E	14.00	14.00	0.00	14.00
END OF CURVE	52	10,172	90.00	148.00	12.9	9938.00	409.25	347.07 S	216.86 E	14.00	14.00	0.00	0.00
CASING SHOE	53	10,192	90.00	148.00	20	9938.00	429.25	364.03 S	227.46 E	0.00	0.00	0.00	0.00
START TURN	54	10,492	90.00	148.00	300	9938.00	729.25	618.44 S	386.44 E	0.00	0.00	0.00	0.00
	55	10,507	90.00	148.63	15.83	9938.00	657.79	631.92 S	394.75 E	4.00	0.00	4.00	0.00
	56	10,523	90.00	149.27	15.83	9938.00	671.88	645.48 S	402.92 E	4.00	0.00	4.00	0.00
	57	10,539	90.00	149.90	15.83	9938.00	686.06	659.13 S	410.93 E	4.00	0.00	4.00	0.00
	58	10,555	90.00	150.53	15.83	9938.00	700.31	672.87 S	418.80 E	4.00	0.00	4.00	0.00
	59	10,571	90.00	151.17	15.83	9938.00	714.64	686.70 S	426.51 E	4.00	0.00	4.00	0.00
	60	10,587	90.00	151.80	15.83	9938.00	729.04	700.61 S	434.07 E	4.00	0.00	4.00	0.00
	61	10,602	90.00	152.43	15.83	9938.00	743.52	714.60 S	441.47 E	4.00	0.00	4.00	0.00
	62	10,618	90.00	153.07	15.83	9938.00	758.06	728.68 S	448.72 E	4.00	0.00	4.00	0.00
	63	10,634	90.00	153.70	15.83	9938.00	772.67	742.83 S	455.81 E	4.00	0.00	4.00	0.00
	64	10,650	90.00	154.33	15.83	9938.00	787.35	757.06 S	462.75 E	4.00	0.00	4.00	0.00
	65	10,666	90.00	154.97	15.83	9938.00	802.09	771.37 S	469.53 E	4.00	0.00	4.00	0.00
	66	10,682	90.00	155.60	15.83	9938.00	816.90	785.75 S	476.15 E	4.00	0.00	4.00	0.00
	67	10,697	90.00	156.23	15.83	9938.00	831.77	800.20 S	482.61 E	4.00	0.00	4.00	0.00
	68	10,713	90.00	156.87	15.83	9938.00	846.69	814.73 S	488.91 E	4.00	0.00	4.00	0.00

	69	10,729	90.00	157.50	15.83	9938.00	861.68	829.32 S	495.05 E	4.00	0.00	4.00	0.00
	70	10,745	90.00	158.13	15.83	9938.00	876.72	843.98 S	501.03 E	4.00	0.00	4.00	0.00
	71	10,761	90.00	158.77	15.83	9938.00	891.81	858.71 S	506.84 E	4.00	0.00	4.00	0.00
	72	10,777	90.00	159.40	15.83	9938.00	906.95	873.49 S	512.49 E	4.00	0.00	4.00	0.00
	73	10,792	90.00	160.03	15.83	9938.00	922.15	888.34 S	517.98 E	4.00	0.00	4.00	0.00
	74	10,808	90.00	160.67	15.83	9938.00	937.39	903.25 S	523.31 E	4.00	0.00	4.00	0.00
	75	10,824	90.00	161.30	15.83	9938.00	952.68	918.22 S	528.47 E	4.00	0.00	4.00	0.00
	76	10,840	90.00	161.93	15.83	9938.00	968.02	933.24 S	533.46 E	4.00	0.00	4.00	0.00
	77	10,856	90.00	162.57	15.83	9938.00	983.39	948.32 S	538.29 E	4.00	0.00	4.00	0.00
	78	10,872	90.00	163.20	15.83	9938.00	998.81	963.45 S	542.95 E	4.00	0.00	4.00	0.00
	79	10,887	90.00	163.83	15.83	9938.00	1014.26	978.63 S	547.44 E	4.00	0.00	4.00	0.00
	80	10,903	90.00	164.46	15.83	9938.00	1029.76	993.86 S	551.76 E	4.00	0.00	4.00	0.00
	81	10,919	90.00	165.10	15.83	9938.00	1045.29	1009.14 S	555.92 E	4.00	0.00	4.00	0.00
	82	10,935	90.00	165.73	15.83	9938.00	1060.85	1024.46 S	559.90 E	4.00	0.00	4.00	0.00
	83	10,951	90.00	166.36	15.83	9938.00	1076.44	1039.83 S	563.72 E	4.00	0.00	4.00	0.00
	84	10,967	90.00	167.00	15.83	9938.00	1092.06	1055.23 S	567.37 E	4.00	0.00	4.00	0.00
	85	10,982	90.00	167.63	15.83	9938.00	1107.71	1070.68 S	570.85 E	4.00	0.00	4.00	0.00
	86	10,998	90.00	168.26	15.83	9938.00	1123.39	1086.16 S	574.15 E	4.00	0.00	4.00	0.00
	87	11,014	90.00	168.90	15.83	9938.00	1139.08	1101.68 S	577.28 E	4.00	0.00	4.00	0.00
	88	11,030	90.00	169.53	15.83	9938.00	1154.80	1117.23 S	580.25 E	4.00	0.00	4.00	0.00
	89	11,046	90.00	170.16	15.83	9938.00	1170.54	1132.81 S	583.04 E	4.00	0.00	4.00	0.00
	90	11,062	90.00	170.80	15.83	9938.00	1186.30	1148.43 S	585.66 E	4.00	0.00	4.00	0.00
	91	11,077	90.00	171.43	15.83	9938.00	1202.07	1164.07 S	588.10 E	4.00	0.00	4.00	0.00
	92	11,093	90.00	172.06	15.83	9938.00	1217.86	1179.74 S	590.37 E	4.00	0.00	4.00	0.00
	93	11,109	90.00	172.70	15.83	9938.00	1233.66	1195.43 S	592.47 E	4.00	0.00	4.00	0.00
	94	11,125	90.00	173.33	15.83	9938.00	1249.47	1211.14 S	594.40 E	4.00	0.00	4.00	0.00
	95	11,141	90.00	173.96	15.83	9938.00	1265.29	1226.88 S	596.15 E	4.00	0.00	4.00	0.00
	96	11,157	90.00	174.60	15.83	9938.00	1281.11	1242.63 S	597.73 E	4.00	0.00	4.00	0.00
	97	11,172	90.00	175.23	15.83	9938.00	1296.94	1258.40 S	599.13 E	4.00	0.00	4.00	0.00
	98	11,188	90.00	175.86	15.83	9938.00	1312.77	1274.18 S	600.36 E	4.00	0.00	4.00	0.00
	99	11,204	90.00	176.50	15.83	9938.00	1328.61	1289.98 S	601.42 E	4.00	0.00	4.00	0.00
	100	11,220	90.00	177.13	15.83	9938.00	1344.44	1305.79 S	602.30 E	4.00	0.00	4.00	0.00
	101	11,236	90.00	177.76	15.83	9938.00	1360.26	1321.60 S	603.00 E	4.00	0.00	4.00	0.00
	102	11,252	90.00	178.40	15.83	9938.00	1376.08	1337.42 S	603.53 E	4.00	0.00	4.00	0.00
	103	11,267	90.00	179.03	15.83	9938.00	1391.90	1353.25 S	603.89 E	4.00	0.00	4.00	0.00
END TURN	104	11,283	90.00	179.66	15.83	9938.00	1407.70	1369.08 S	604.07 E	4.00	0.00	4.00	0.00
TD	105	19,272	90.00	179.66	7989.06	9938.00	9380.62	9358 S	651 E	0.00	0.00	0.00	0.00
OPEN HOLE FAY 9,081													

XTO Energy, Inc.
BOP STACK DIAGRAM

FBIR GeorgeBlackHawk 21X-6
Location: NE NW Sec 6, 148N-91W
Footage: 621 ft FNL, 1766 ft FWL
Elev: Graded Pad 1974', KB 1997'
Dunn County, ND



XTO Energy, Inc.

CHOKE MANIFOLD DRAWING

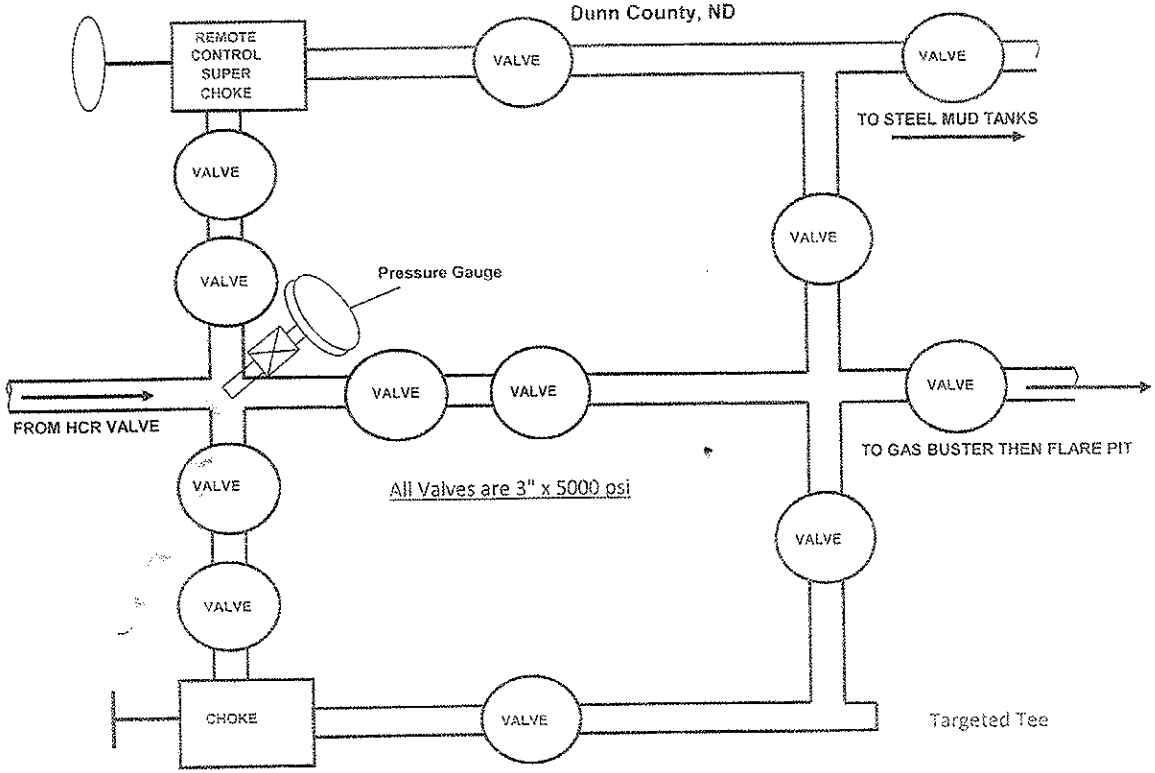
FBIR GeorgeBlackHawk 21X-6

Location: NE NW Sec 6, 148N-91W

Footage: 621 ft FNL, 1766 ft FWL

Elev: Graded Pad 1974', KB 1997'

Dunn County, ND



XTO ENERGY INC
H2S CONTINGENCY PLAN

FBIR GeorgeBlackHawk 21X-6

Location: NE NW Sec 6, 148N-91W
Footage: 621 ft FNL, 1766 ft FWL
Elev: Graded Pad 1974', KB 1997'

Dunn County, ND

Latitude 47.672414N
Longitude 102.325647W

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- B. Directions to Well Site
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I. INTRODUCTION

A. OPERATOR'S ADDRESS AND PHONE

XTO ENERGY, INC.
PO BOX 1589 or 35399 Highway 23 - 8 miles East
SIDNEY, MT 59270
406-482-4000 (24 HR #)

B. DIRECTIONS TO WELL SITE

From Mandaree, ND: 15.3 mi E on BIA 12, 2.3 mi NE on BIA 13, 2.8 mi SE on existing road, then 455' NE into location

C. PURPOSE OF PLAN

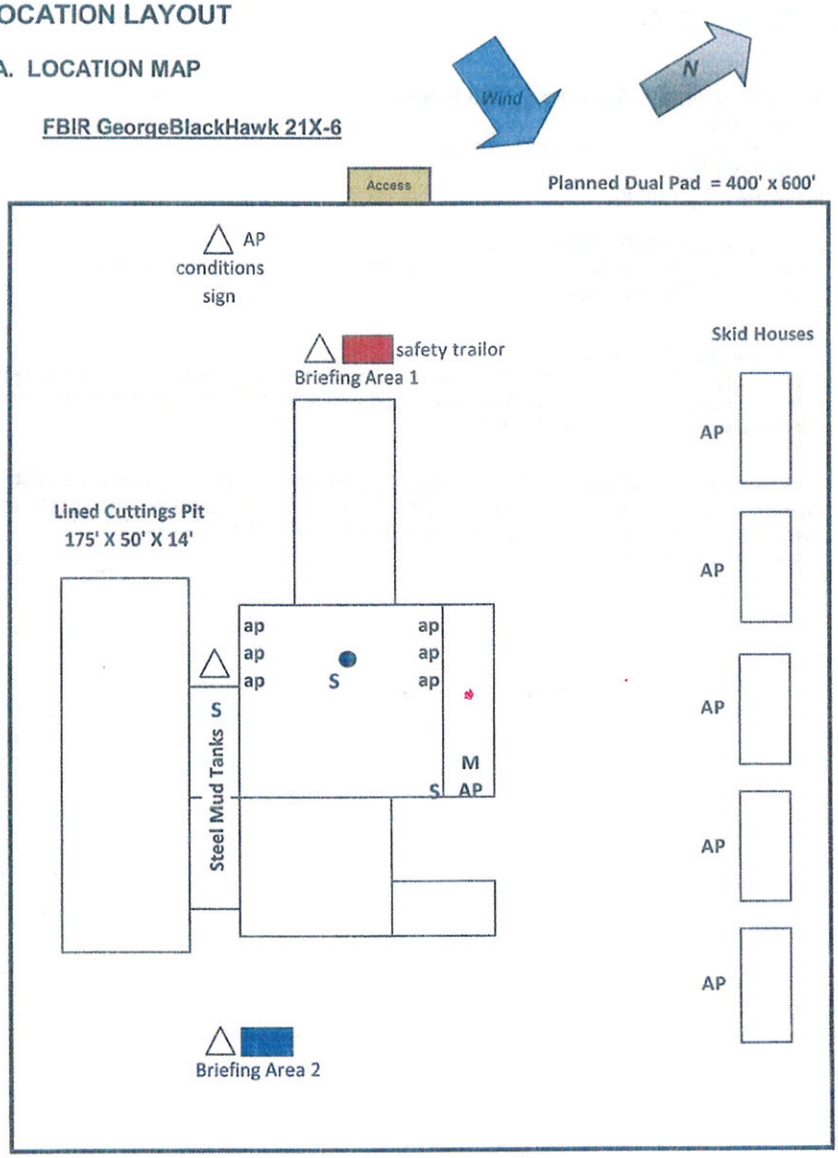
The purpose of this plan is to safeguard the lives of the public, contract personnel and company personnel in the event of equipment failure or disasters during drilling or completion operations in formations which may contain Hydrogen Sulfide Gas, H2S.

As a precautionary measure, this H2S Contingency Plan has been prepared to assure the safety of all concerned, should a disaster occur. However, the Operator's on-site representative may have specified materials and practices for the drilling or completion of this well, which supercede the minimum requirements as outlined in this plan.

II. LOCATION LAYOUT

A. LOCATION MAP

FBIR GeorgeBlackHawk 21X-6



III. SAFETY EQUIPMENT

All H2S related safety equipment must be installed, tested and operational at a depth of 500 feet above, or 3 days prior to penetrating the first zone expected to contain H2S (whichever comes first).

A. SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

1. Safety trailer w/ 10-380 C.F. cylinder air supply system
2. Sufficient low-pressure airline hose with quick connects
3. Six-airline mask w/emergency escape cylinders
4. Seven 30 minute self contained breathing apparatus
5. Airline manifolds and air pack stands to accompany air packs
6. Three windsocks, frames and poles
7. Oxygen powered resuscitator
8. One set of signs
9. One 36 unit first aid kit
10. One 30# fire extinguisher
11. One stretcher
12. Flare gun w/shells (supplied upon request)
13. Gastec pump type gas detector w/full range of H2S detector tubes
14. One air cylinder w/regulator and filler hose for briefing area #2
15. H2S and briefing area signs
16. Well condition signs and flags
17. Explosion-proof bug blower (provided upon request)
18. 3 channel electronic monitor w/explosion proof warning system
19. One SO2 (Sulfur Dioxide) portable detector (supplied if or when H2S is being flared)
20. Additional equipment - added as needed.

B. TYPE OF EQUIPMENT AND STORAGE LOCATIONS

1. There will be six Scott airline masks on location. Five will be located on the rig floor with access to the shale shaker. One will be located in the derrick. Each mask will have an easily accessible air line hose.

2. There will be seven 30-minute self-contained breathing apparatus on location. They will be positioned as follows: one at Operator's representative's trailer, one at Tool Pusher's trailer, one at Briefing Area #1 one at Briefing Area #2, one at rig dog house stairway, one at mud logger's trailer and one at hopper area.

3. A Gastec, pump type, gas detector with low and high range detector tubes will be located in the doghouse

4. Two cleared, briefing areas will be designed as Safe Briefing Areas #1 and #2.

5. The Briefing Area most upwind is designated as Safety Briefing Area #1. In an emergency, personnel must assemble at this upwind area for instructions from their supervisor.

6. The H2S Safety Trailer will contain a cascade system of (10) 380 C.F. air cylinders that will provide a continuous air supply to air lines located on the rig. It will also contain one resuscitator, one 30 minute air pack and one stretcher, one 36 unit first aid kit, one 30# dry chemical fire extinguisher, and will have a windsock or streamer to indicate wind direction.

7. Two other windsocks will be installed so as to be visible from all parts of the location.

8. A well condition warning sign will be displayed at the location entrance to advise of current operating conditions.

9. A list of emergency telephone numbers will be kept on rig floor, tool pusher's trailer, the Operator's on-site representative's trailer and in the Safety Trailer.

10. A barricade will be available to block the entrance to location should an emergency occur. In most cases, a vehicle will be used to block the entrance.

11. A three-channel H2S monitor will be located in the doghouse. The three sensors will be installed: one on the shale shaker, one in the cellar and one near the bell nipple.

12. An undulating high and low pitch siren and light will be installed on the derrick "A" leg.

13. If H2S concentrations reach 10 ppm, an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H2S.

14. Any time it is necessary to flare gas containing H2S, a Sulfur Dioxide monitor will be used to determine SO2 concentrations

C. MAXIMUM NUMBER OF PEOPLE ON LOCATION AT ANY ONE TIME

1. There will be a maximum of 13 persons on location at any one time, unless additional respirators are provided during special operations where more than 13 persons will be on location.

IV. OPERATING PROCEDURES

A. BLOWOUT PREVENTION MEASURES DURING DRILLING

1. Blowout Prevention Requirements: All BOP equipment shall meet the American Petroleum Institute specifications as to materials acceptable for H2S service and tested accordingly (or to BLM specifications).

2. Drilling String Requirements: All drill string components are to be of material that meets the American Petroleum Institute's specifications for H2S service. All drill string components should be inspected to IADC critical service specifications prior to running in well.

B. GAS MONITORING EQUIPMENT

1. A continuous H2S detection system, consisting of three H2S detectors and an audible/visual warning system will be in operation during all phases of this H2S Contingency Plan. The detection system will be adjusted and calibrated such that an H2S exposure of 10 ppm or higher (at any sensor) will trigger the visual portion (blinking or rotating light), and an H2S exposure of 15 ppm or higher (at any sensor) will trigger the audible portion (wailing or yelping siren) of the warning system (i.e., H2S continually present at or above threshold levels). A trained operator or H2S supervisor will monitor the H2S detection system.

2. When approaching or completing H2S formations, crewmembers may attach 8-hour electronic H2S personnel monitors to their person.

3. Hand held H2S sampling gas detectors will be used to check areas not covered by automatic monitoring equipment.

C. CREW TRAINING AND PROTECTION

1. All personal working at the well site will be properly trained in accordance with the general training requirements outlined in the API Recommended Practices for Safe Drilling of Wells Containing H2S. The training will include, but not be limited to, the following:

a. General information about H2S and SO2 gases
b. Hazards associated with H2S and SO2 gases
c. Safety equipment on location
d. Proper use and care of personal protective equipment
e. Operational procedures in dealing with H2S gas
f. Evacuation procedures
g. First aid, reviving an H2S victim, toxicity, etc.
h. Designated Safe Briefing Areas
i. Buddy System
j. Regulations
k. Review of Drilling Operations Plan

2. Initial training shall be completed when drilling reaches a depth of 500' above or 3 days prior to penetrating (whichever comes first) the first zone containing or expected to contain H2S.

3. Weekly H2S and well control drills for all personnel on each working crew shall be conducted.

4. Safety Equipment: As outlined in the Safety Equipment index, H2S safety protection equipment will be available to/or assigned each person on location.

D. METALLURGICAL CONSIDERATONS

1. Steel drill pipe used in H2S environments should have yield strength of 95,000 psi or less due to potential embrittlement problems. Drill stem joints near the top of the drill string are normally under the highest stress levels during drilling and do not have the protection of elevated down hole temperatures. These factors should be considered in design of the drill string.
Precautions should be taken to minimize drill string stress caused by conditions such as excessive dogleg severity, improper torque, whip, abrasive wear or tool joints and joint imbalance. American Petroleum Institute, Bulletin RR 7G, will be used as a guideline for drill string precautions.

2. Corrosion inhibitors may be applied to the drill pipe or to the mud system as an additional safeguard.

3. Blowout preventors should meet or exceed the recommendations for H2S service as set forth in the latest edition of API RI 53.

E. MUD PROGRAM AND TREATING

1. It is of utmost importance that the mud be closely monitored for detection of H2S and reliability of the H2S treating chemicals.

2. Identification and analysis of sulfides in the mud and mud filtrates will be carried out per operator's prescribed procedures.

3. The mud system will be pre-treated with Zinc Carbonate, Ironite Sponge or similar chemicals of H2S control prior to drilling into the H2S bearing formation. Sufficient quantities of corrosion inhibitor should be on location to treat the drill string during Drill Stem Test Operations. Additionally, Aqua Ammonia should be on hand to treat the drill string for crew protection, should H2S be encountered while tripping the drill string following drill stem testing

F. WELL CONTROL EQUIPMENT

1. Flare System
    a. A flare system shall be designed and installed to safely gather and burn H2S bearing gas.
    b. Flare lines shall be located as far from the operating site as feasible and in a manner to compensate for wind changes.
    c. The flare line mouth shall be located not less then 150' from wellbore.
    d. Flare lines shall be straight unless targeted with running tees.

2. Remote Controlled Choke: A remote controlled choke shall be installed for all H2S drilling and where feasible for completion operations. A remote controlled valve may be used in lieu of this requirement for completions operations.

3. Mud-gas separators and rotating heads shall be installed and operable for all exploratory wells.

V. OPERATING CONDITIONS

A Well Condition Sign and Flag will be posted on all access roads to the location. The sign shall be legible and large enough to be read by all persons entering the well site and be placed a minimum of 200', but no more than 500', from the well site to allow vehicles to turn around at a safe distance prior to reaching the site.

A. DEFINITION OF WARNING FLAGS

2. Condition Yellow: Potential Danger. Any operation where the possibility of encountering H2S exists and in all situations where concentrations of H2S are detected in the air below the threshold level (10 ppm).

a. Cause of condition:
   - *Circulating up drill breaks
   - *Trip gas after trip
   - *Circulating out gas on choke
   - *Poisonous gas present, but below threshold concentrations
   - *Drill stem test

b. Safety Action:
   - *Check safety equipment and keep it with you
   - *Be alert for a change in condition
   - *Follow instructions

3. Condition Red: Extreme Danger. Presence of H2S at or greater than 10 ppm. Breathing apparatus must be worn.

a. Safety action:
   - *MASK UP. All personal will have protective breathing equipment with them. All nonessential personnel will move to the Safe Briefing Area and stay there until instructed to do otherwise. All essential personnel (those necessary to maintain control of the well) shall wear breathing apparatus to perform operations related to well control.

b. Order evacuation of local people within the danger zone. Request help from local authorities, State Police, Sheriff's Dept. and Service Representative.

c. The decision to ignite the well is the responsibility of the Operator's on-site representative and should be made only as a last resort, when it is clear that:
   - *human life is endangered
   - *there is no hope of controlling the well under prevailing conditions

B. CIRCULATING OUT KICK (WAIT AND WEIGHT METHOD)

If it is suspected that H2S is present with the gas whenever a kick is taken, the wait and weight method of eliminating gas and raising the mud will be followed (below):

a. Increase density of mud in pits to 'kill' weight mud.

b. Open choke and bring pump to initial circulating pressure by holding casing pressure at original value until pump is up to predetermined speed.

c. When initial circulating pressure is obtained on drill pipe, zero pump stroke counter and record time.

d. Reduce drill pipe pressure from initial circulating pressure to final circulating pressure by using pump strokes and/or time according to graph

e. When 'kill' weight mud is at the bit, hold final circulating pressure until kill weight mud is to surface.

f. When the well has been put on the choke and circulation has been established, the following safety procedures must be initiated:
   - *determine when gas is anticipated to reach surface
   - *move all non-essential personnel to Safe Briefing Area
   - *check out protective breathing apparatus to all remaining personnel (apparatus is to be kept with them until the kick has been completely circulated out)
   - *mud men will see that the proper amount of H2S scavenging chemical is in

the mud and record times checked
*ensure ignition flare is burning and valves are open to designated flare stacks

C. CORING OPERATIONS IN H2S BEARING ZONES

1. Personal protective breathing apparatus will be worn from 10 to 15 stands in advance of retrieving the core barrel. Cores to be transported should be sealed and marked indicating the presence of H2S.
   a. Yellow Caution Flag will be flown at the well condition sign.
   b. The "NO SMOKING" rule will be enforced

D. DRILL STEM TESTING OF H2S ZONES

1. The DST subsurface equipment will be suitable for H2S service as recommended by the API.

2. Drill stem testing of H2S zone will be conducted in daylight hours.

3. All non-essential personnel will be moved to an established safe area or off location.

4. The "NO SMOKING" rule will be enforces.

5. DST fluids will be circulated through a remote controlled choke and a separator to permit flaring of gas. A continuous pilot light will be used.

6. A yellow or red flag will be flown at entrance to location depending on present gas condition.

7. If warranted, use Aqua Ammonia for neutralizing the toxicity of H2S from drill string. Aqua Ammonia should be on location even if not used for DST.

8. On completion of DST, if H2S contaminated formation fluids or gases are present in drill string, floor workers will be masked up before test valve is removed from drill string and continue "mask on" condition until such time that readings in work area do not exceed 15 ppm of H2S gas.

VI. EMERGENCY PROCEDURES

A. SOUNDING ALARM

1. The fact is to be instilled in the minds of all rig personnel that the sounding of the alarm means only one thing - H2S IS PRESENT and everyone is to proceed to his assigned station and the contingency plan is put into effect.

B. DRILLING CREW ACTIONS

1. All personnel will don their protective breathing apparatus. The driller will take necessary precautions as indicated in operating procedures.

2. The Buddy system will be implemented. All personnel will act upon directions from the Operator's on-site representative.

3. If there are non-essential personnel on location, they will move off location.

4. Entrance to the location will be patrolled, and the proper well condition flag will be displayed at the entrance to the location.

C. RESPONSIBILITIES OF PERSONNEL

1. In order to assure the proper execution of this plan, it is essential that one person be responsible for and in complete charge of implementing these procedures. The responsibe person will be as follows:
   a. The Operator's on-site representative (consultant) or his assistant.
   b. Contract Tool Pusher.

D. STEPS TO BE TAKEN

1. Contact the main office(s) of the Operator &/or the Rig Contractor as listed in this plan below (by the quickest means of communications):

2. An assigned crewmember will blockade the entrance to the location. No unauthorized personnel will be allowed entry into the location.

3. The Operator's on-site representative will remain on location and attempt to regain control of the well.

4. The Rig Contractor's rig superintendent will begin evacuation of those persons in immediate danger. He will begin by telephoning residents in the danger zone. In the event of no contact by telephone, the tool pusher will proceed at once to each dwelling for a person-to-person contact. In the event the tool pusher cannot leave the location, he will assign a responsible crewmember to proceed in the evacuation off local residents. Upon arrival, the Sheriff's Department and safty equipment contractor's personnel will aid in further evacuation.

E. COMPANY & CONTACT PERSONNEL

1. Operator's Drilling Supt	Office	406-482-6808
Kal Beckman	Home	701-572-6057
	Cell	701-570-2536
2. Operator's Drilling Engineer	Office	405-319-3285
Ross Lubbers	Home	405-513-5955
	Cell	405-659-8563
3. Patterson Drilling Supt	Office	701-483-6640
Jeff Long	Cell	701-318-2707
4. Nabors Drilling Supt	Office	701-572-6704
Scott Reid	Home	701-385-4697
	Cell	701-848-6227
5. Petroleum Experience – Drilling Consultants		
Pete Peterson	Office	701-774-8357

F. LEAK IGNITION

Leak Ignition Procedure: (used to ignite a leak in the event it becomes necessary to protect the public)

1. Two men, the Operator's on-site representative and the Contractor's Drlg Superintendent or safety equipment provider's representative, wearing self-contained pressure demand air masks must determine the perimeter of the flammable area. This should be done with one man using an H2S detector and the other one using a flammable gas detector. The flammable perimeter should be established at 30% to 40% of the lower flammable limits.

2. After the flammable perimeter has been established and all employees and citizens have been removed from the area, the ignition team should move to the up-wind area of the leak perimeter and fire a flare into the area. If the leak isn't ignited on the 1st attempt, move in 30 - 40 feet and fire again. Continue moving in and firing until the leak is ignited or the flammable gas detector indicates the ignition team is moving into the hazardous area. If trouble is incurred in igniting the leak by firing toward the leak, try firing 40 - 90 feet to each side of the area where you have been firing. If still no ignition is accomplished, ignite the copper line burner and push it into the leak area. This should accomplish ignition. If ignition is not possible due to the makeup of the gas, the toxic leak perimeter must be established and maintained to ensure evacuation is completed and continue until the emergency is secure.

3. The following equipment and man-power will be required to support the ignition team:

   a. One flare gun.
   b. Four pressure demand air packs.
   c. Two nylon ropes tied to the ignition team.
   d. Two men in a clear area equipped with air packs.
   e. Portable butane bottle with copper line.

4. The person with the final authority will then ignite the well.

G. GENERAL EQUIPMENT

1. Two areas on the location will be designated as briefing areas. The one that is upwind from the well will be designated as the "Safe Briefing Area" or "Briefing Area #1".

2. In the case of an emergency, personnel will assemble in the upwind area as per prior instructions from the operator's representative.

3. The H2S trailer provided by the safety contractor will contain 10 air cylinders, a resuscitator, one 30 minute air pack and will have a windsock.

4. Two other windsocks will be installed.

5. A condition warning sign will be displayed at the location entrance.

6. A list of emergency telephone numbers will be kept on the rig floor, tool pusher's trailer and the Operator's on-site representative's trailer.

7. Two barricades will be available to block the entrance to location.

8. An undulating high and low pitch siren will be installed.

9. A telephone line or mobile phone will be available at the well site for incoming and outgoing communications.

VII. APPENDIX

A. EMERGENCY & MEDICAL FACILITIES:

NORTH DAKOTA EMERGENCY ASSISTANCE:	800-472-2121
AMBULANCE SERVICE:	
BELFIELD, ND	911
DICKINSON, ND	911
SIDNEY, MT	406-488-2100
TIOGA, ND	701-664-2200
WILLISTON, ND	911
WATFORD CITY, ND	701-444-3516
KILLDEER, MANNING, ND	911
HOSPITALS:	
SIDNEY HEALTH CENTER - SIDNEY, MT	406-488-2100
MERCY MEDICAL CENTER - WILLISTON, ND	701-774-7400
McKENZIE COUNTY MEMORIAL HOSPITAL - WATFORD CITY	701-842-3000
ST. JOSEPH'S HOSPITAL - DICKINSON, ND	701-225-7200
TIOGA MEDICAL CENTER	701-568-3626

B. LAW ENFORCEMENT AND FIRE FIGHTING AGENCIES

POLICE or SHERIFF:			
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT	911	OR	406-433-2809
MCKENZIE COUNTY			701-444-3654
TIOGA - WILLIAMS COUNTY	911	OR	701-664-2514
WATFORD CIY, ND	911	OR	701-842-2400
MANNING, ND SHERIFF	911	OR	701-573-4449
FIRE:			
ALEXANDER, ND			911
ARNEGARD, ND			701-586-3500
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT			406-433-1122
TIOGA, ND			701-664-2200
WATFORD CITY, ND			701-842-3516
WILLISTON, ND			911

C. WELL CONTROL SPECIALISTS:

BOOTS AND COOTS	713-931-8884
RED ADAIR COMPANY INC	713-464-0230
WILD WELL CONTROL	701-353-5481

D: GOVERNMENTAL AGENCIES:

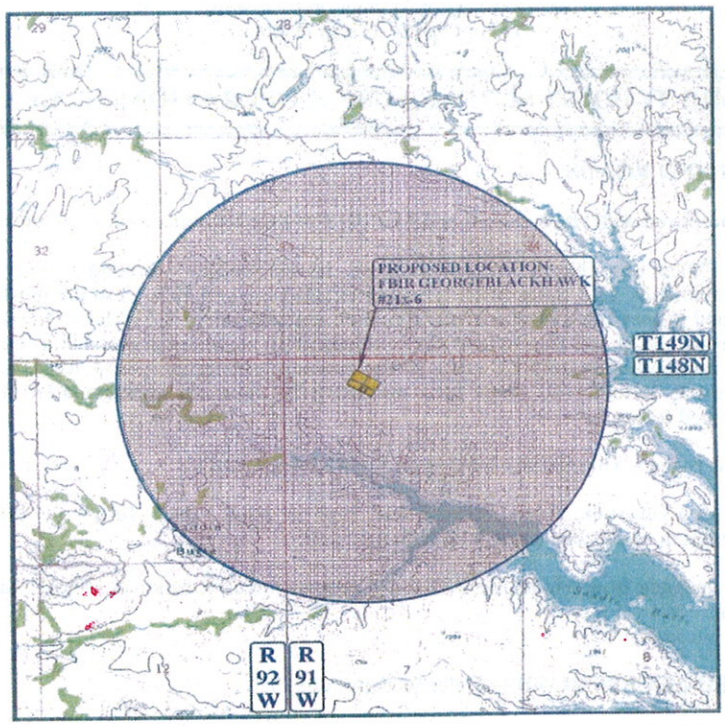
STATE WATER COMMISSION	701-224-4940
NDIC:	
CHIEF ENFORCEMENT OFFICER	701-224-2969
STATE GEOLOGIST	701-777-2231
NORTH DAKOTA STATE DEPARTMENT OF HEALTH:	
DIVISION OF ENVIRONMENTAL ENGINEERING	701-224-2348
DIVISION OF WATER &POLLUTION CONTROL:	
BISMARCK, ND	701-224-2375
DISTRICT FOREST SERVICE RANGER:	
DICKINSON, ND	701-225-5151
MEDORA, ND	701-623-4466
WATFORD CITY, ND	701-842-2393
BUREAU OF LAND MANAGEMENT:	
DICKINSON, ND	701-225-9148
U.S. CORPS OF ENGINEERS:	
RIVERDALE, ND	701-654-7411
OIL SPILLS DISASTER REPORTING:	800-424-8802

E. RADIO & TELEVISION STATIONS:

KEYZ AM 660	701-572-5371
KYYZ FM 96.1	701-572-3911
KDIX	701-225-5133
KRRB-FM	701-227-1222
KUMV TV	701-572-4676
KXMD TV	701-572-2345
KQCD TV	701-225-6543

VIII. RESIDENTS AND LANDOWNERS

A. 1 MILE RADIUS EXPOSURE MAP



B. RESIDENTS WITHIN 1 MILE AND PHONE NUMBERS

None

XTO ENERGY, INC.
FBIR GeorgeBlackHawk 21X-6
BIA Lease # 7420A49835
NE¼NW¼ (Lot 3), Section 6, T148N, R91W
Dunn County, North Dakota

MULTI-POINT SURFACE USE & OPERATIONS PLAN

A. EXISTING ROADS -

1. The proposed well site is staked and four (4) 200-foot reference stakes are present.

2. From Mandaree, North Dakota proceed in an easterly direction along BIA 12 approximately 15.3 miles to the junction of this road and BIA 13 to the northeast; turn left and proceed in a northeasterly direction approximately 2.3 miles to the junction of this road and an existing road to the southeast; turn right and proceed in a southeasterly direction approximately 2.8 miles to the beginning of the proposed access road to the northeast; follow road flags in a northeasterly direction approximately 455'to the proposed location.

3. Access roads - All roads are labeled on Topo Maps A and B.

4. Existing roads will be maintained and kept in good repair during all drilling and completion operations associated with this well.

5. Total distance from Mandaree, ND to the proposed well location is approximately 2051 miles.

B. PLANNED ACCESS ROADS - Refer to Topo Map "B"

Approximately 455' of new road construction will be required for access to the proposed FBIR GeorgeBlackHawk 21X-6 well location.

1. Width - fourteen (14) foot running surface with a sixteen (16) foot sub-grade, crowned and ditched.

2. Construction standard - the access road will be constructed in accordance with roading guidelines established for oil & gas exploration and development activities as referenced in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.

   All topsoil will be stripped from the access road route prior to performing any further construction activities thereon. The salvaged topsoil will be stockpiled apart from subsoil materials for future reclamation of the access road right-of-way. The topsoil will be covered in matting and/or seeded to prevent erosion and maintain fertility.

   If soils along the access road route are dry during construction, water will be applied to the road surface to facilitate soil compaction and minimize soil loss as a result of wind erosion.

3. Maximum grade - eight (8) percent or less.

4. Turnouts – as deemed necessary

5. Drainage design - the access road will be upgraded and maintained as necessary to prevent soil erosion and accommodate all-weather traffic. The road will be crowned and ditched with water turnouts installed as necessary to provide for proper drainage along the access road route.

6. Culverts, cuts and fills – one (1) culvert will be required at the entrance to the location. (See Topo Map B)

7. Surfacing material - the access road will be surfaced with gravel or scoria purchased from a local contractor having a permitted source of materials within the general area, as required by the Authorized Officer, Bureau of Indian Affairs.

8. Gates, cattle guards or fence cuts - one (1) cattle guard will be required at the entrance of the location as the entire location will be fenced for drilling and completion operations. See Figure #1 for the location of the cattle guard.

    a. The cattle guard will be installed in accordance with roading guidelines contained in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.
    b. No fence cuts will be required.

9. Road maintenance - the road surface and shoulders will be kept in a safe and useable condition and will be maintained in accordance with the original construction standards.

    All drainage ditches and culverts will be kept clear and free-flowing, and will also be maintained in accordance with the original construction standards.

    The access road right-of-way will be kept free of trash during all operations.

10. The proposed access road route has been centerline staked.

C. EXISTING WELLS WITHIN A ONE (1) MILE RADIUS -

1. Existing Wells – Refer to Topo Map C showing the location of the proposed well and the point of radius for the one mile area of review.

a. Water wells	- none known
b. Abandoned wells	- none known
c. Temporarily abandoned wells	- none known
d. Disposal wells	- none known
e. Drilling wells	- none known
f. Producing wells	- none known
g. Shut-in wells	- none known
h. Injection wells	- none known
i. Monitoring wells	- none known

D. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES OWNED BY XTO ENERGY, INC. WITHIN A ONE (1) MILE RADIUS

1. Existing Facilities

   a. Tank batteries - none.
   b. Production facilities - none.
   c. Oil gathering lines - none.
   d. Gas gathering lines - none.

2. New Facilities Contemplated

   a. All production facilities will be located on the disturbed portion of the well pad and at a minimum of twenty (25) feet from the toe of the back slope or top of the fill slope. See Figure #1 and Figure #2 for plats depicting the original contours of the location and the proposed cuts and fills and the typical cross sections for the location.

   b. Production facilities will require a working area approximately 300' X 500' in size and will generally consist of a pumping unit at each well head, tank battery, heater-treater and emergency/flare pit.

      A berm will be constructed completely around those production facilities designed to hold fluids (i.e., production tanks, produced water tanks and/or heater-treater). These berms will be constructed to hold >110% of the capacity of the largest tank plus one full day's production, and is independent of the back cut. See Figure #3 for a diagram of the proposed facilities.

      Load out lines will be located within the tank battery berm and will have a drip barrel with steel mesh guard installed under the outlet.

3. Prior to the commencement of drilling operations, the FBIR GeorgeBlackHawk 21X-6 well location will be fenced, having four (4) strands of barbed wire held in place by metal side posts and wooden corner "H" braces in order to protect both livestock and wildlife.

4. During drilling and subsequent operations, all equipment and vehicles will be confined to the access road and any additional areas which may be specified in the approved Application for Permit to Drill.

5. Reclamation of disturbed areas no longer needed for operations will be accomplished by grading, leveling and seeding as recommended.

E. LOCATION AND TYPE OF WATER SUPPLY

1. Fresh water for use in drilling operations will be obtained from the water supply close to the town of Killdeer, North Dakota.

F. SOURCE OF CONSTRUCTION MATERIALS

1. Any construction materials (gravel or scoria) which may be required for surfacing of the drill pad will be obtained from a private contractor having a previously approved source of materials within the general area.

G. METHODS OF HANDLING WASTE MATERIALS

1. Cuttings - the drilled cuttings will be deposited in the cuttings pit as shown on Figure #1 and Figure #4. The cuttings pit will be designed to prevent the collection of surface runoff and will be constructed entirely in cut section of the well location (see Figure #1). If active drilling is not occurring, the cuttings pit will have nylon netting placed over the entire pit to prevent migratory birds and other wildlife from entering the pit. A maximum mesh size of 1.5 inches will allow for snow loading and will exclude most birds. The netting will be placed at least five feet from the top surface of any pit fluids to prevent the mesh from sagging into the fluids during snow loading events or high winds. The cuttings pit will be appropriately fenced to prevent access by persons, wildlife or livestock. Three non-working sides will be fenced during drilling operations and the fourth side will be fenced once drilling and/or completion rigs have been moved off location. If completion does not occur immediately subsequent to drilling operations, the fourth side will be fenced immediately upon drilling rig release.

   Reclaiming and backfilling will occur when completion operations are finished by solidifying with fly ash and burial in accordance with North Dakota Industrial Commission, Department of Mineral Resources, rules and regulations.

2. Drilling fluids utilized in the fresh water mud systems will be contained in steel tanks. Drilling fluids utilized in the oil-based mud system will be contained in steel tanks on location. During drilling, there will be a 2' berm surrounding the oil based mud tanks. All free fluid will be reclaimed from the cuttings pit before solidification.

3. Produced fluids - liquid hydrocarbons produced during completion operations will be placed in test tanks on the location.

   Any spills of oil, gas, salt water or any other potentially hazardous substance will be cleaned up and immediately removed to an approved disposal site.

4. Sewage - portable, self-contained chemical toilets will be provided for human waste disposal. As required, the toilet holding tanks will be pumped and the contents disposed of in an approved sewage disposal facility.

5. Garbage and other waste material - all garbage and non-flammable waste materials will be contained in a self contained, portable dumpster or trash cage. Upon completion of operations, or as needed, the accumulated trash will be hauled off-site to a state approved sanitary landfill.

   Used motor oil (change oil) will be placed in closed containers and disposed of at an authorized disposal site.

No trash will be placed in the reserve pit.

6. Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage will be cleaned up and removed from the well location. No potentially adverse materials or substances will be left on the location.

7. Hazardous Materials – XTO Energy, Inc. maintains responsibility for recognizing and handling hazardous materials. All hazardous materials will be handled in an appropriate manner to minimize the potential for leaks or spills to the environment. All spills of reportable quantity will be contained, reported and cleaned up in accordance with State and Federal regulations.

H. ANCILLARY FACILITIES

None anticipated.

I. WELLSITE LAYOUT

1. Figure #1 shows the drill site layout as staked. Cross-sections have been drafted to visualize the planned cuts and fills across the proposed well location (refer to Figure #2). All topsoil will be stripped from the location (including areas of cut, fill, and/or subsoil storage) and stockpiled in two separate areas for future reclamation of the well site. The topsoil will be covered in matting and/or seeded to prevent erosion and maintain fertility. Best Management Practices including matting and straw booms/waddles will be used to aid in prevention of soil erosion. Fill slopes shall be covered in matting immediately.

2. Figure #4 is a diagram showing a typical location layout. No permanent living facilities are planned on the FBIR GeorgeBlackHawk 21X-6 well location.

3. All equipment and vehicles will be confined to the approved areas in this Application for Permit to Drill (i.e., access road, well pad, spoil and topsoil storage areas).

4. The cuttings pit will be lined with a minimum 12 mil liner and designed to maintain a two foot free board. See Figure #7 for a spec sheet on the proposed liner.

5. Prior to the commencement of drilling operations, the entire well location will be fenced with four (4) strands of barbed wire. The fencing will be maintained until such time as the well bore has been physically plugged and abandoned and the well location has been successfully reclaimed.

6. Any hydrocarbons on the pit will be removed as soon as possible after drilling operations are completed.

J. PLANS FOR SURFACE RECLAMATION

1. Rat and mouse holes will be backfilled immediately upon release of the drilling rig from the location.

2. The cuttings pit will be solidified with fly ash as soon as possible after rig release and the liner will be folded over and the cuttings buried on site.

3. Producing Operations:

   a. Backfilling, leveling and re-contouring are planned as soon as possible after cessation of drilling and completion operations.

   b. All disturbed surfaces (including the access road and well pad areas) will be reseeded using a seed mixture to be recommended by the Authorized Officer, Bureau of Indian Affairs in consultation with the surface allottee as appropriate.

4. Abandoned Well Location:

   a. Upon final abandonment of the well location, both the access road and well location will be restored to approximately the original ground contour(s) by replacing the fill material into the cut and over the back slope.

K. SURFACE OWNERSHIP

The well site and access road are situated on Allotted lands within the Fort Berthold Indian Reservation. The owners of these lands are:

Gina Marie Ainsworth
507 S. Kent St.
Madison, NE 68748

Cheryl K. Estep
2479 Roundhill Dr.
Alamo, CA 94507

Darrell Fielder
3826 Vineland Ave.
Studio City, CA 91604

Clinton B. Fielder
3901 Fairman St.
Lakewood, CA 90712

Yvette C. Fielder
2520 W. Bartlett Way
Queen Creek, AZ 85140

Julia R. Fox
P. O. Box 461
Parshall, ND 58770

Ronald Grinnell
P. O. Box 1161

New Town, ND 58763

Keith O. Grinnell
1024 5th St. SW
Sidney, MT 59270

Curtis Grinnell
3076 Town Oaks Road
Cameron Park, CA 95682

Dwight J. Grinnell
P. O. Box 563
New Town, ND 58763

Eric P. Grinnell
1624 S. 14th St., #4
Grand Forks, ND 58201

Michael D. Grinnell
P. O. Box 482
O'Neill, NE 67863

Tiffany Leigh Grinnell
2659 Quail Knolls Way
Lake Elsinore, CA 92530

Heather Marie Grinnell
Fort Berthold Agency
New Town, ND 58763

Trevor Edward Grinnell
Fort Berthold Agency
New Town, ND 58763

Lawrence Grinnell
P. O. Box 502
New Town, ND 58763

Sharon Grinnell Hogsten
7841 Shinarump Dr.
Golden Valley, AZ 86413

Luther E. Grinnell, Jr.
13101 Hubbard St.
Sylmar, CA 91342

David A. Grinnell, Jr.
708 W. Hedde St., Apt. #8
Grand Island, NE 68801

Barbara Hamner
54427 Pine Tree Lane

North Fork, CA 93643
Aileen Jackson
840 N. Spruce – Lot 323
Rapid City, SD 57701

Muriel Jackson
5627 N. 16th St., Apt F4
Phoenix, AZ 85016

Steven J. Kiser Estate
No Known Address

Judith A. Ladeaux
4912 Ocean Lane
Elk Grove, CA 95757

Blane E. Reese
P. O. Box 684
Miranda, CA 95553

Randall A. Reese
P. O. Box 684
Miranda, CA 95553

Juli Hope Rowberg
285 NE Milne Road
Hillsboro, OR 97124

Merle A. Smith
Box 146
Parshall, ND 58770

Charlie A. Smith
Box 146
Parshall, ND 58770

Jerome D. Smith
26 4th St. SW, Apt. #7
Parshall, ND 58770

Reba A. White Shirt
P. O. Box 45535
Phoenix, AZ 85064

John White Shirt, Jr.
4197 East Shelton Road
Wilcox, AZ 85643

Billie Jo Wounded Face
430 9th St. N, Apt. 905
New Town, ND 58763

Tex Wounded Face
P. O. Box 3213
Bismarck, ND 58501

Cynthia D. Zeyouma
P. O. Box 801
Parker, AZ 85344

L. OTHER INFORMATION

1. Surface Use Activities:

   a. The primary surface use is for livestock grazing.

2. Proximity of Water, Occupied Dwellings, Archaeological, Historical or Cultural Sites:

   a. The closest source of permanent water is Lake Sakakawea, which is located approximately 1.5 miles east of the proposed well location.

   b. XTO Energy, Inc. will be responsible for informing all persons associated with this project that they will be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects or site(s).

   c. If archaeological, historical or vertebrate fossil materials are discovered, XTO Energy, Inc. will suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations will not resume until written authorization to proceed is issued by the Authorized Officer.

      Within five (5) working days the Authorized Officer will evaluate the discovery and inform XTO Energy, Inc. of actions that will be necessary to prevent loss of significant cultural or scientific values.

      XTO Energy, Inc. will be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, XTO Energy, Inc. will be allowed to resume operations.

3. Additional Requirements for Operations on Surface Estate Administered by the Bureau of Indian Affairs:

   a. XTO Energy, Inc. will be responsible for weed control on disturbed areas within the exterior limits of this permit and will consult with the Authorized Officer, Bureau of Indian Affairs and/or local authorities for acceptable weed control measures.

Lessee's or Operator's Representative and Certification

FBIR GeorgeBlackHawk
NENW (Lot 3), Sec. 1-T148N-R91W
Dunn County, North Dakota
Lease No. 7420A49835

OPERATOR

XTO Energy, Inc.
7114 W. Jefferson Ave., Suite 305
Denver, Colorado 80235
303.969.8280

OPERATOR'S REPRESENTATIVES

Permit Matters: J. Michael Warren (303.963.8243)
Drilling Matters: Ross Lubbers (405-319-3285)
Completion Matters: Doug McCrady (303.969.8280)
On-Site Meeting Representative: Kal Beckman (406.482.4000)

CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 9th day of March, 2011.

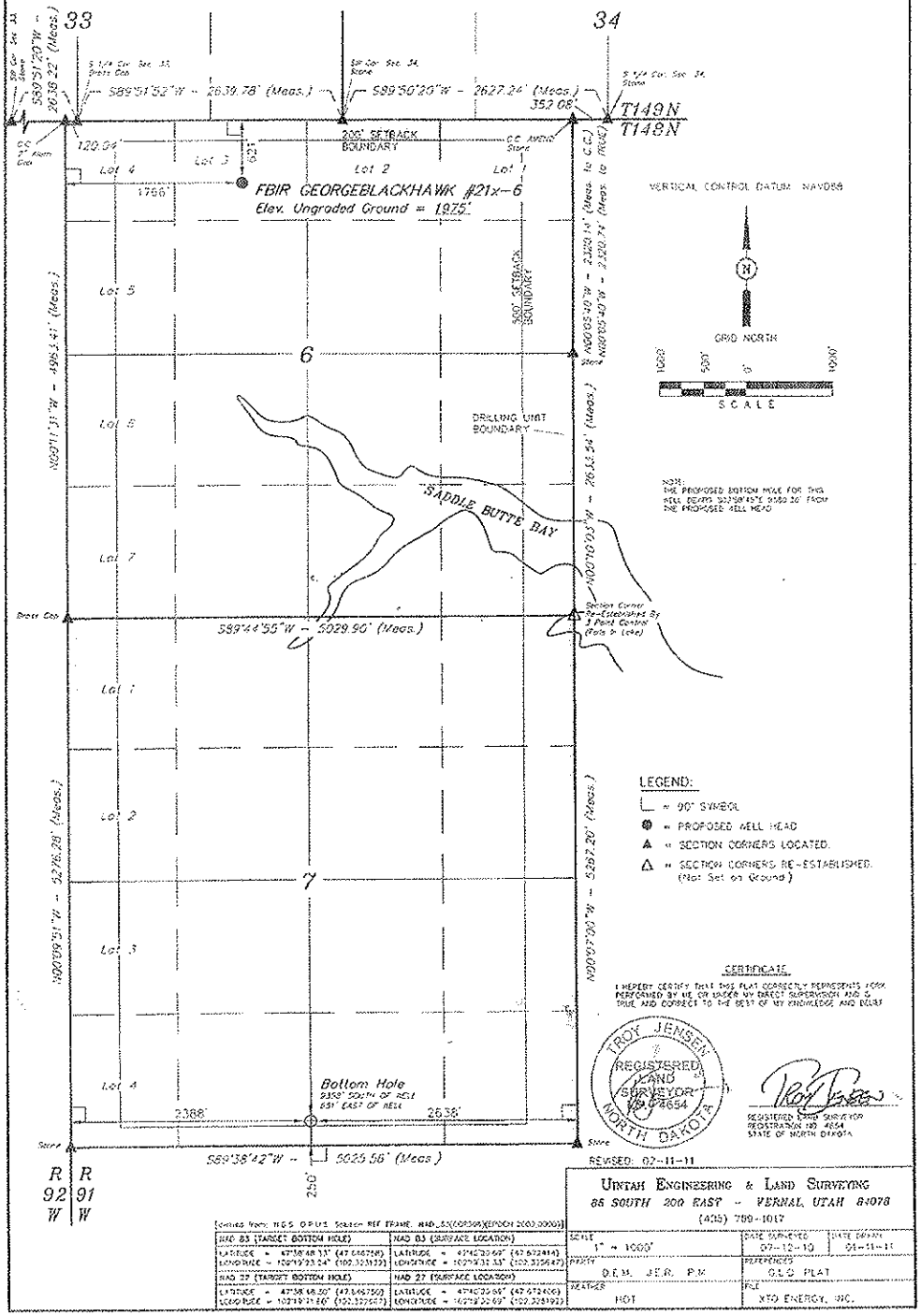
Name: J. Michael Warren
Position Title: Regulatory Supervisor
Telephone: 303-963-8243
mike_warren@xtoenergy.com

Field Representative: Kal Beckman
Address: P. O. Box 1589, Sidney, MT 59270
Phone: 406-482-4000 Ext. 107
kal_beckman@xtoenergy.com

WELL LOCATION PLAT
T148N, R91W, 5th. P.M.

XTO ENERGY, INC.

Well location, FBIR GEORGEBLACKHAWK #21x-6, located as shown in LOT 3 of Section 6, T148N, R91W, 5th P.M., Dunn County, North Dakota



LEGEND:

- ⌊ = 90° SYMBOL
- ● = PROPOSED WELL HEAD
- ▲ = SECTION CORNERS LOCATED.
- △ = SECTION CORNERS RE-ESTABLISHED. (Not Set on Ground)

CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

TROY JENSEN REGISTERED LAND SURVEYOR NO. 4654 NORTH DAKOTA

REGISTERED LAND SURVEYOR
REGISTRATION NO. 4654
STATE OF NORTH DAKOTA

REVISED: 02-11-11

UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(435) 789-1017

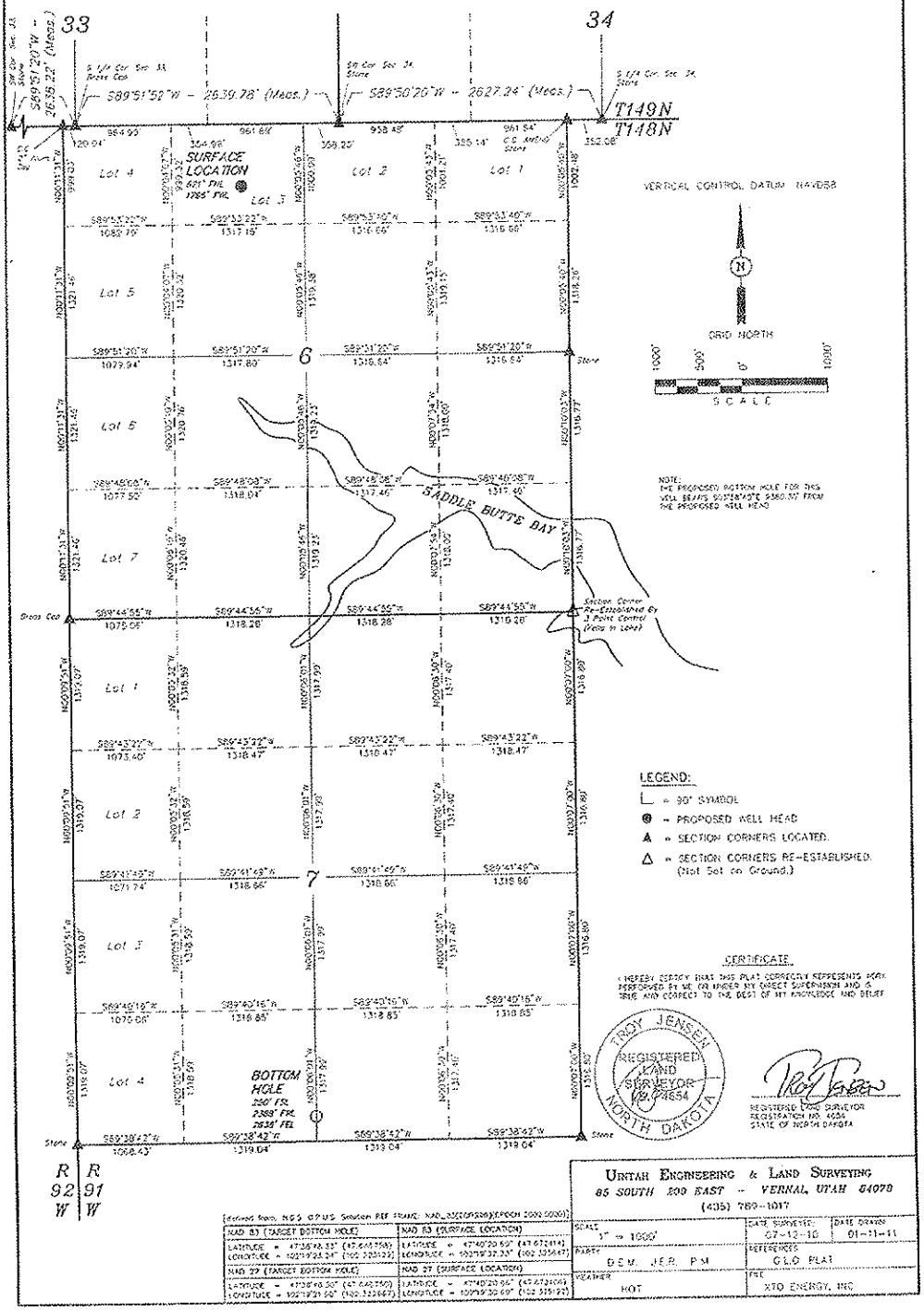
NAD 83 (TARGET BOTTOM HOLE)	NAD 83 (SURFACE LOCATION)
LATITUDE = 47°38'48.33" (47.646758)	LATITUDE = 47°40'20.69" (47.672414)
LONGITUDE = 102°19'23.24" (102.323122)	LONGITUDE = 102°19'32.33" (102.325647)
NAD 27 (TARGET BOTTOM HOLE)	NAD 27 (SURFACE LOCATION)
LATITUDE = 47°38'48.50" (47.646750)	LATITUDE = 47°40'20.69" (47.672406)
LONGITUDE = 102°19'21.60" (102.322667)	LONGITUDE = 102°19'32.69" (102.325192)

SCALE 1" = 1000'	DATE SURVEYED 07-12-10	DATE DRAWN 01-11-11
PARTY D.E.M. J.E.R. P.M.	REFERENCES G.L.O. PLAT	
WEATHER HOT	FILE XTO ENERGY, INC.	

XTO ENERGY, INC.

Well location, FBIR GEORGEBLACKHAWK #21x-6, located as shown in LOT 3 of Section 6, T148N, R91W, 5th P.M., Dunn County, North Dakota.

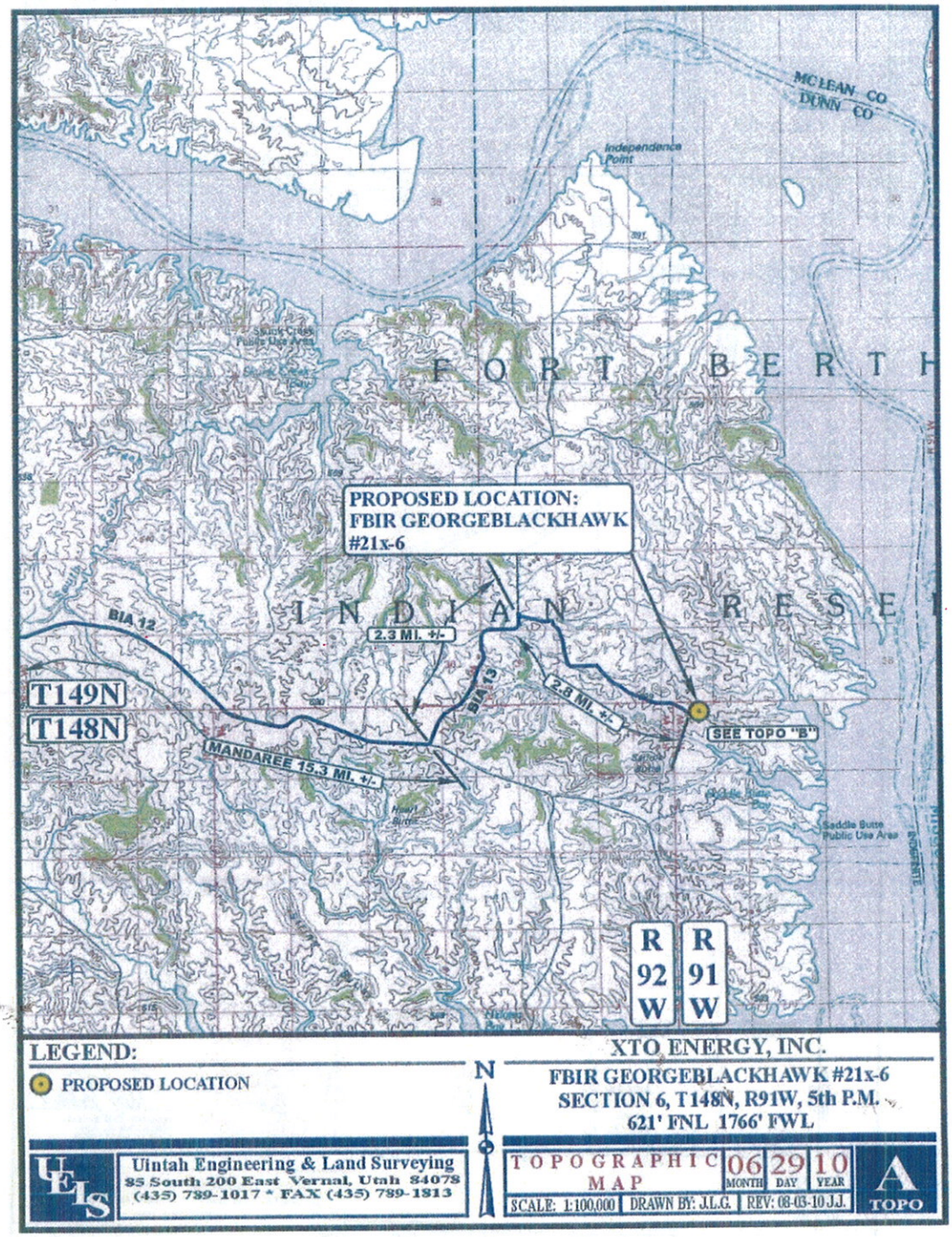
SECTION BREAKDOWN
T148N, R91W, 5th P.M.



NAD 83 (TARGET BOTTOM HOLE)	NAD 83 (SURFACE LOCATION)
LATITUDE = 47°38'48.33" (47.646758)	LATITUDE = 47°40'20.60" (47.672414)
LONGITUDE = 102°19'25.24" (102.323122)	LONGITUDE = 102°19'37.33" (102.325647)
NAD 27 (TARGET BOTTOM HOLE)	NAD 27 (SURFACE LOCATION)
LATITUDE = 47°38'48.30" (47.646750)	LATITUDE = 47°40'20.56" (47.672409)
LONGITUDE = 102°19'21.60" (102.322667)	LONGITUDE = 102°19'30.69" (102.315192)

UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(435) 789-1017

SCALE 1" = 1000'	DATE SURVEYED: 07-12-10	DATE DRAWN: 01-11-11
PARTY: D.E.M. J.E.R. P.M.	REFERENCES: G.L.O. PLAT	
WEATHER: HOT	FILE: XTO ENERGY, INC.	



LEGEND:

PROPOSED LOCATION

N

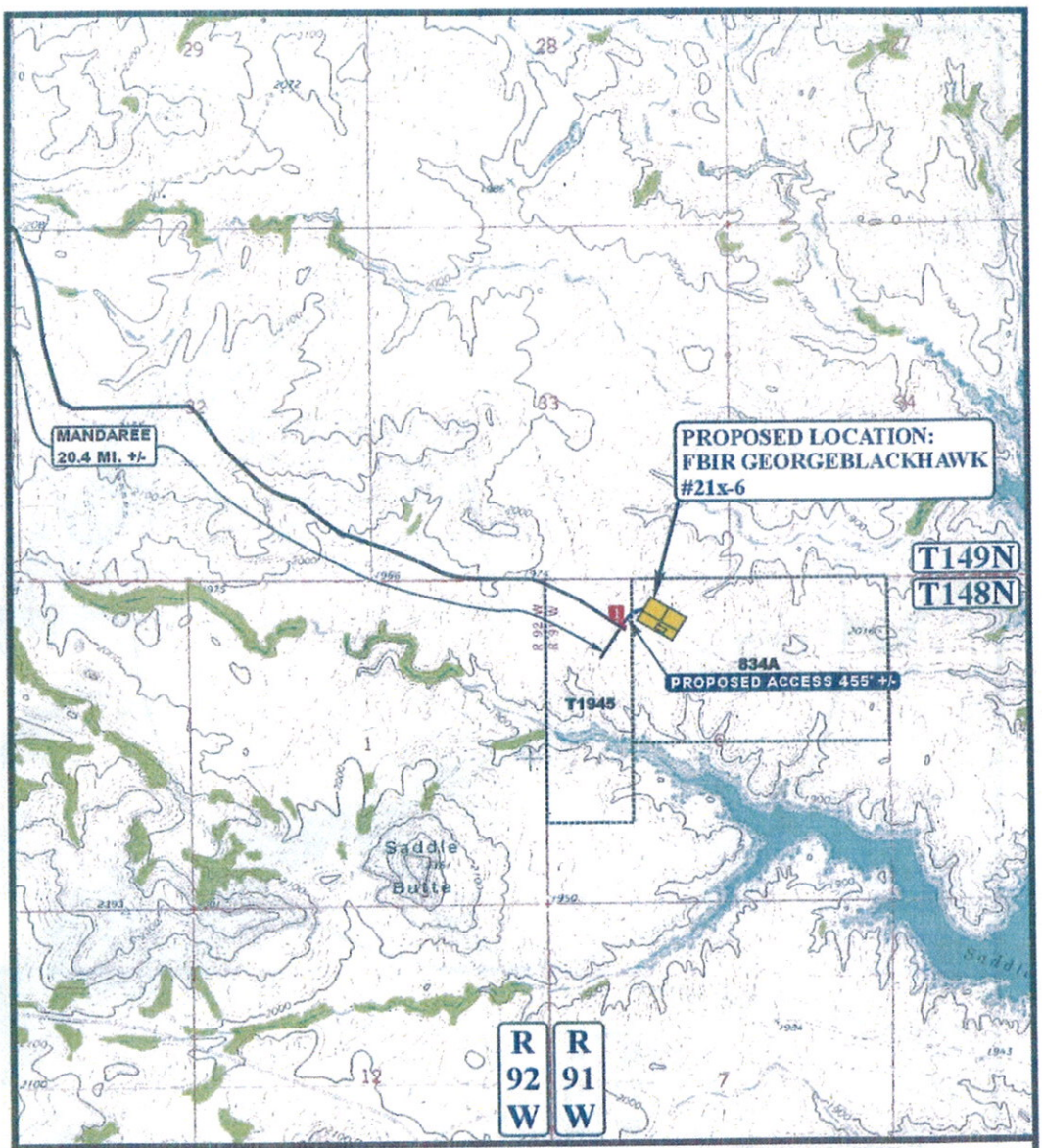
XTO ENERGY, INC.

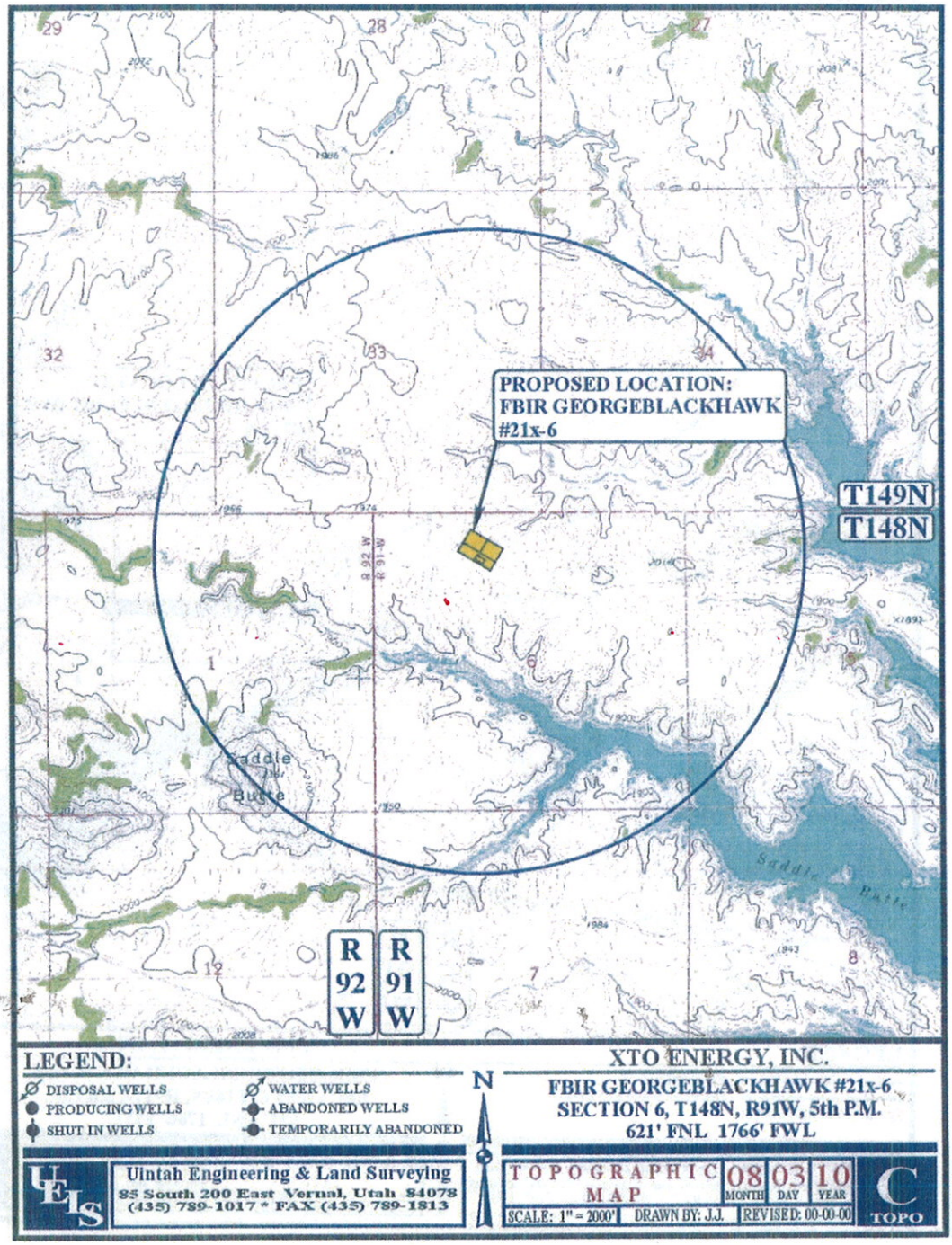
FBIR GEORGEBLACKHAWK #21x-6
SECTION 6, T148N, R91W, 5th P.M.
621' FNL 1766' FWL

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

TOPOGRAPHIC MAP | 06 MONTH | 29 DAY | 10 YEAR | A TOPO

SCALE: 1:100,000 | DRAWN BY: J.L.G. | REV: 08-03-10 J.J.


MANDAREE
20.4 MI. +/-
PROPOSED LOCATION:
FBIR GEORGEBLACKHAWK
#21x-6
T149N
T148N
834A
PROPOSED ACCESS 455' +/-
T1945
Saddle
Butte
R
92
W
R
91
W
LEGEND:
EXISTING ROAD
PROPOSED ACCESS ROAD
1 18" CMP REQUIRED
N
XTO ENERGY, INC.
FBIR GEORGEBLACKHAWK #21x-6
SECTION 6, T148N, R91W, 5th P.M.
621' FNL 1766' FWL
Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813
TOPOGRAPHIC MAP
06 MONTH
29 DAY
10 YEAR
SCALE: 1" = 2000'
DRAWN BY: J.L.G.
REV: 08-03-10 J.J.
B TOPO


PROPOSED LOCATION:
FBIR GEORGEBLACKHAWK
#21x-6
T149N
T148N
R 92 W
R 91 W
Saddle Butte
R
92
W
R
91
W
LEGEND:
DISPOSAL WELLS
PRODUCING WELLS
SHUT IN WELLS
WATER WELLS
ABANDONED WELLS
TEMPORARILY ABANDONED
N
XTO ENERGY, INC.
FBIR GEORGEBLACKHAWK #21x-6
SECTION 6, T148N, R91W, 5th P.M.
621' FNL 1766' FWL
Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813
TOPOGRAPHIC MAP
08 MONTH
03 DAY
10 YEAR
SCALE: 1" = 2000'
DRAWN BY: J.J.
REVISED: 00-00-00
C TOPO

XTO ENERGY, INC.

PAD LAYOUT FOR

FEIR GEORGEBLACKHAWK #21x-6

SECTION 6, T14SN, R91W, 6th P.M.

621' FNL 1766' FWL

FIGURE #1

SCALE: 1" = 60'
DATE: 01-11-11
DRAWN BY: P.M.
REVISED: 04-01-11

GRID NORTH

Proposed Access Road

Install Cattle Guard

Approx. Top of Cut Slope

Install Fence

Install Silt Fence

Approx. Toe of Fill Slope

Cut/Fill Transition Line

Construct 24' High Berm

Round Corner as Needed

Topsoil Stockpile

Cuttings Pit Backfill & Spoils Stockpile

20' WIDE BENCH

CUTTINGS PIT (14' Deep)

1:1 SLOPE

2:1 SLOPE

30' WIDE BENCH

Total Pit Capacity W/4' of Freeboard = 6,040 Bbls.± Total Pit Volume = 2,810 Cu. Yds

C-1.2'
El. 75.3'

F-0.4'
El. 75.7'

C-3.2'
El. 77.3'

Sta. 6+00

C-0.9'
El. 75.0'

F-8.2'
El. 65.3'

C-2.0'
El. 76.1'

Sta. 2+90

El. 76.4'
C-16.3'
(Btm. Pit)

C-1.4'
El. 75.5'

Sta. 1+50

El. 76.2'
C-16.1'
(Btm. Pit)

C-1.7'
El. 75.8'

C-2.9'
El. 77.0'

Sta. 0+00

C-1.3'
El. 75.4'

F-6.4'
El. 67.7'

160'

240'

85'

90'

55'

290'

510'

Elev. Ungraded Ground At Loc. Stake = 1975.0'

FINISHED GRADE ELEV. AT LOC. STAKE = 1974.1'

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X-Section Scale
1" = 40'
1" = 100'

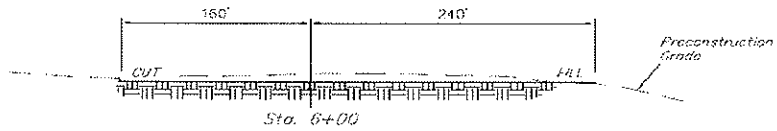
DATE: 01-17-11
DRAWN BY: P.M.
REVISED: 04-01-11

XTO ENERGY, INC.

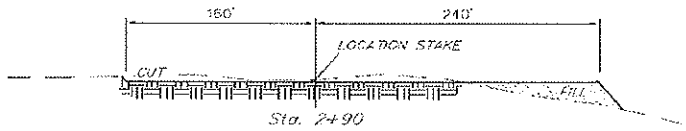
TYPICAL CROSS SECTIONS FOR

FBIR GEORGEBLACKHAWK #21x-6
SECTION 6, T14S, R91W, 5th P.M.
621' FNL 1756' FWL

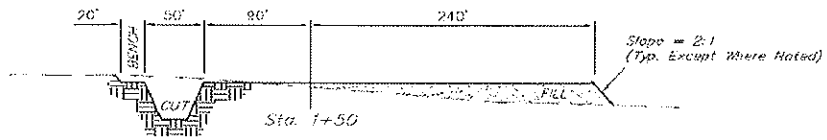
FIGURE #2



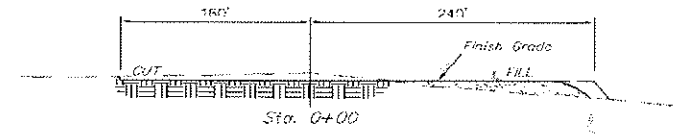
Sta. 6+00



Sta. 2+90



Sta. 1+50



Sta. 0+00

APPROXIMATE YARDAGES

(6") Topsoil Stripping	=	4,190 Cu. Yds.
Remaining Location	=	14,870 Cu. Yds.
Cuttings Pit Cut	=	2,810 Cu. Yds.
TOTAL CUT	=	22,470 CU.YDS.
FILL	=	16,270 CU.YDS.

* NOTE:
FILL QUANTITY INCLUDES 5% FOR COMPACTION

EXCESS MATERIAL	=	6,200 Cu. Yds.
Topsoil & Pit Backfill (1/2 Pit Vol.)	=	6,200 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	=	0 Cu. Yds

APPROXIMATE ACREAGES

WELL SITE AREA OF LOSS = ± 8.008 ACRES
ACCESS ROAD AREA OF LOSS = ± 1.044 ACRES
TOTAL = ± 9.052 ACRES

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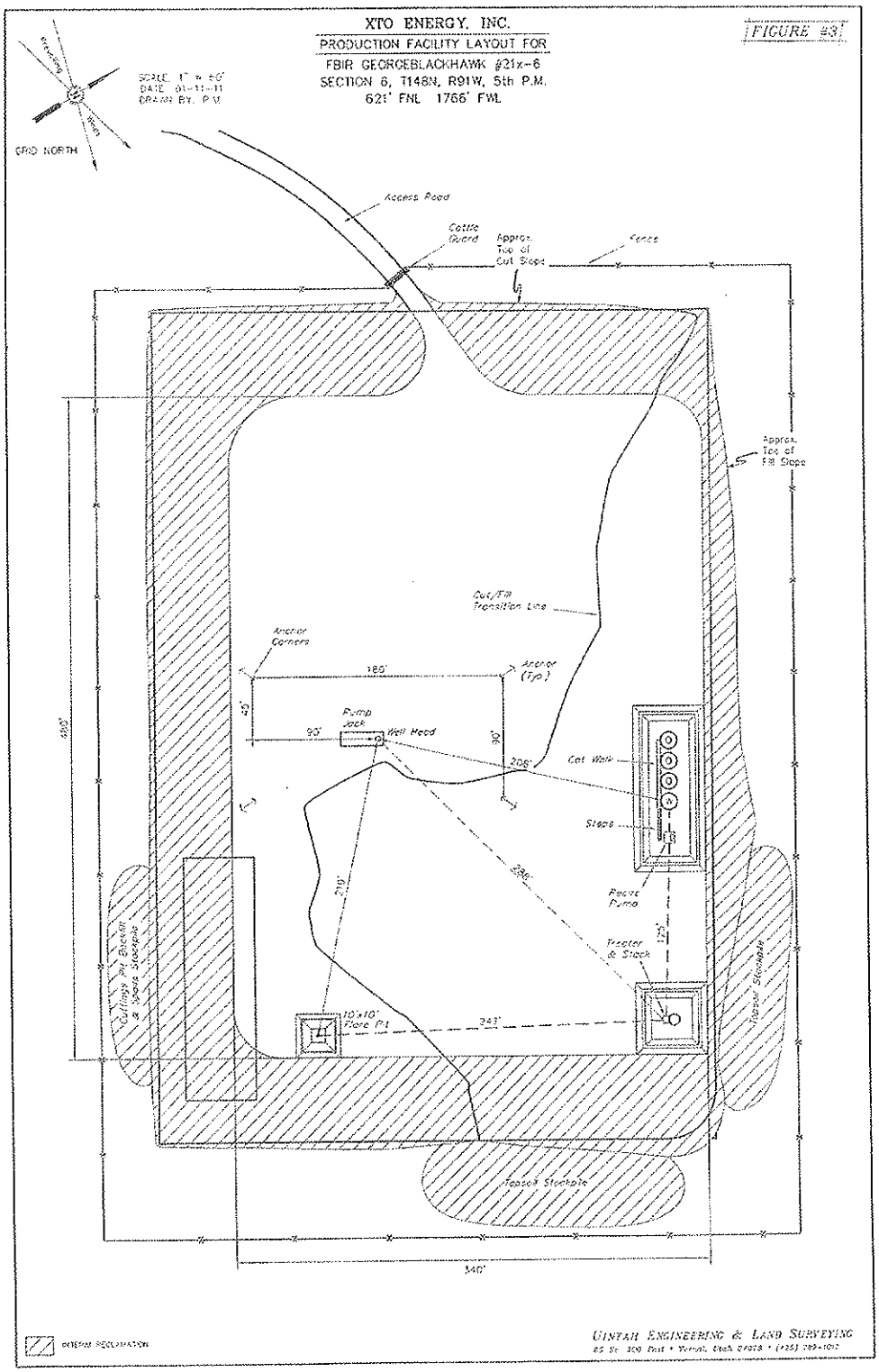

XTO ENERGY, INC.
PRODUCTION FACILITY LAYOUT FOR
FBIR GEORGEBLACKHAWK #21x-6
SECTION 6, T148N, R91W, 5th P.M.
621' FNL 1766' FWL
FIGURE #3
SCALE 1" = 50'
DATE 01-11-11
DRAWN BY P.M.
GRID NORTH
Access Road
Cattle Guard
Approx. Top of Cut Slope
Fence
Approx. Top of Fill Slope
Cut/Fill Transition Line
Anchor Corners
Anchor (Typ.)
185'
45'
90'
Pump Jack
Well Head
90'
208'
Cat Walk
Steps
Recirc Pump
Treater & Stack
125'
288'
219'
10'x10' Flare Pit
243'
Cuttings Pit Backfill & Spoils Stockpile
Topsoil Stockpile
Topsoil Stockpile
480'
340'
INTERIM RECLAMATION
UINTAH ENGINEERING & LAND SURVEYING

XTO ENERGY, INC.

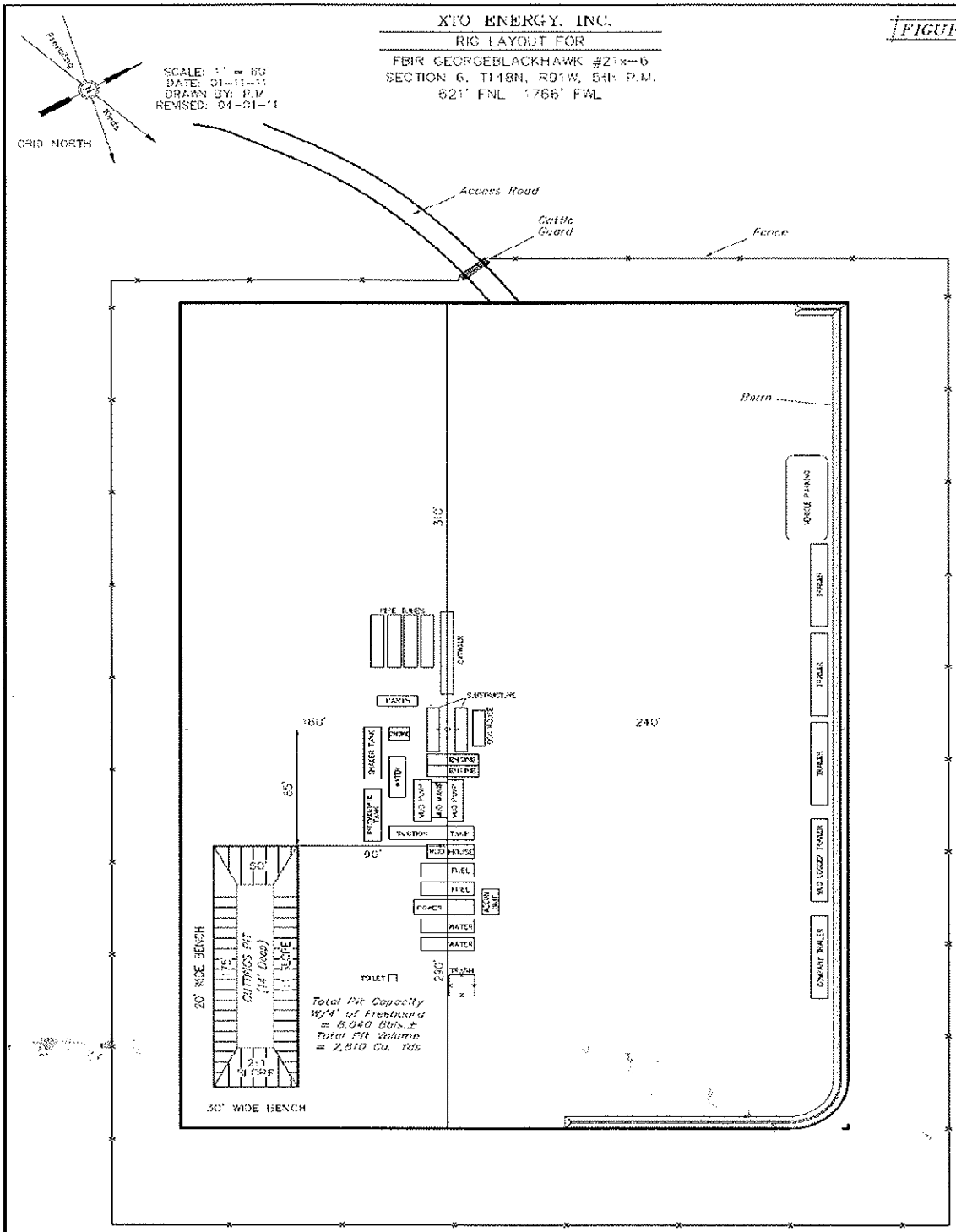
RIG LAYOUT FOR

FBIR GEORGEBLACKHAWK #21X-6

SECTION 6, T14S, R01W, 6th P.M.

621' FNL 1766' FWL

FIGURE #4



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XTO ENERGY, INC.

FBIR GEORGEBLACKHAWK #21x-6

LOCATED IN DUNN COUNTY, NORTH DAKOTA
SECTION 6, T148N, R91W, 5th P.M.

PHOTO: VIEW FROM CORNER #5 TO LOCATION STAKE — CAMERA ANGLE: NORTHEASTERLY

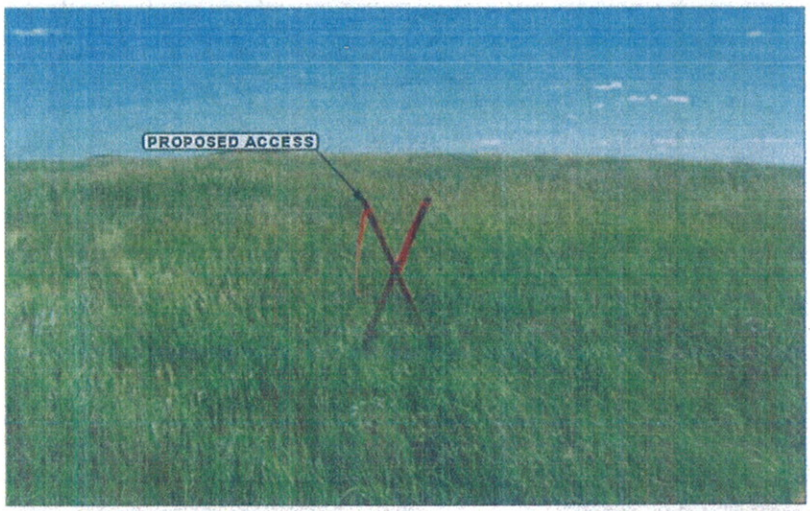


PHOTO: VIEW FROM BEGINNING OF PROPOSED ACCESS — CAMERA ANGLE: NORTHEASTERLY

- Since 1964 -
Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

LOCATION PHOTOS	08 MONTH	03 DAY	10 YEAR	PHOTO
TAKEN BY: D.M.	DRAWN BY: J.J.	REVISED: 00-00-00		

XTO ENERGY, INC.

FINAL RECLAMATION FOR

FBIR GEORGEBLACKHAWK #21x-6

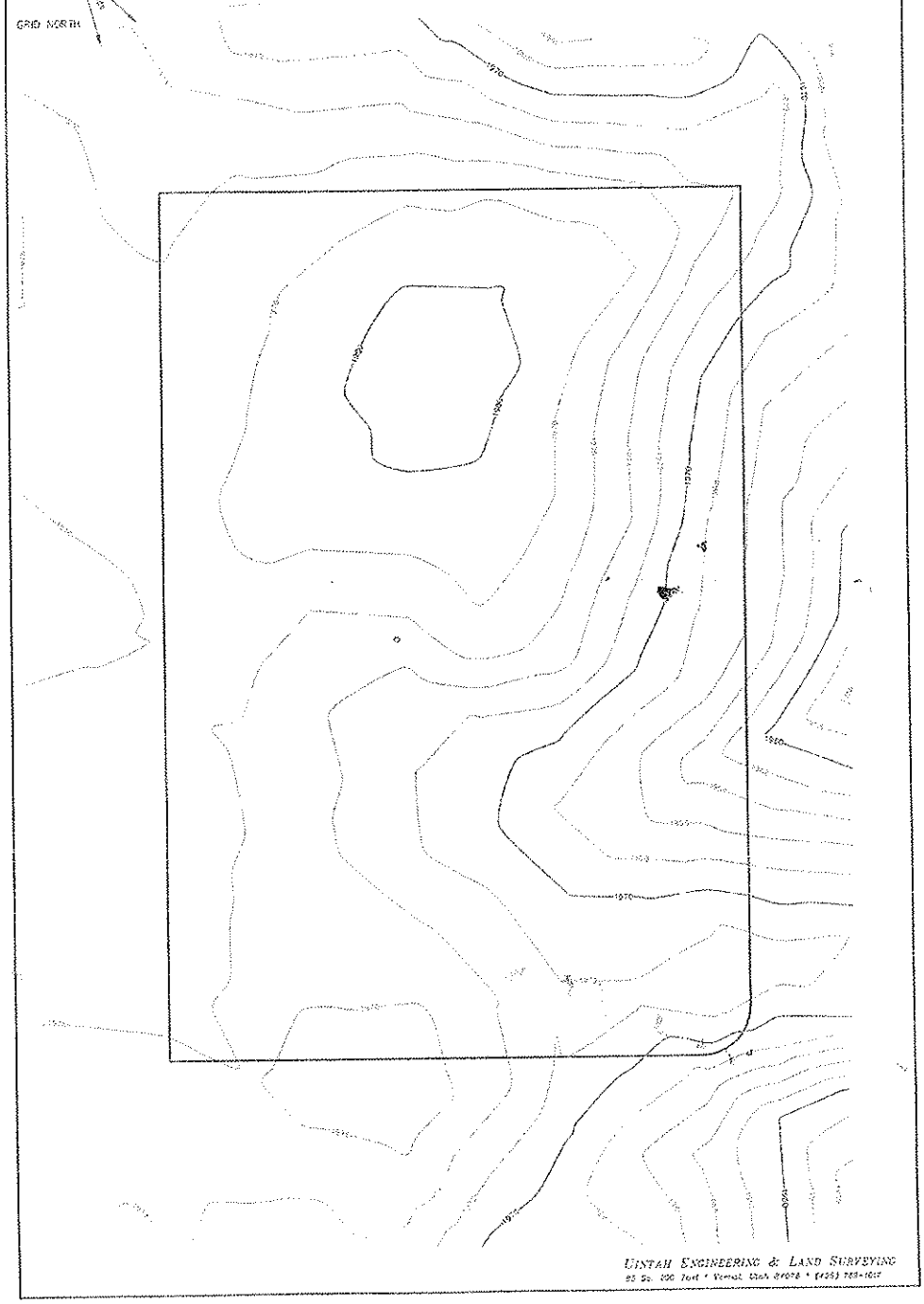
SECTION 6, T14S, R91W, 5th P.M.

621' FNL 1766' FWL

FIGURE #5

SCALE: 1" = 60'
DATE: 01-11-11
DRAWN BY: P.M.

GRID NORTH



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XTO ENERGY, INC.

TYPICAL ROAD ACCESS FOR

FBIR GEORGEBLACKHAWK #21x-6

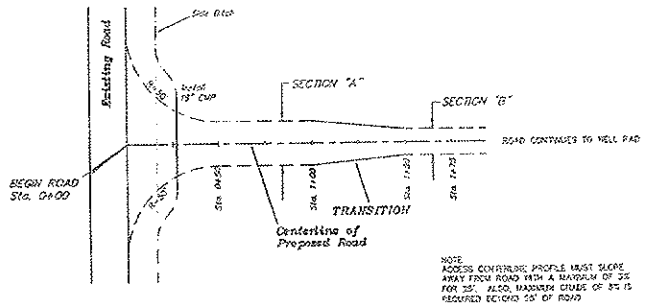
SECTION 6, T14S, R91W, 5th P.M.

621' FNL 1766' FWL

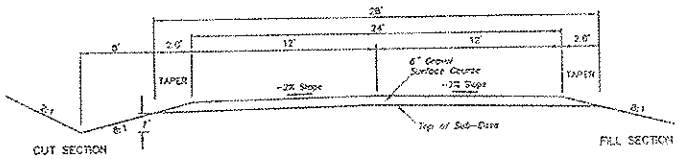
FIGURE #6

SCALE: NONE
DATE: 01-11-11
DRAWN BY: P.M.

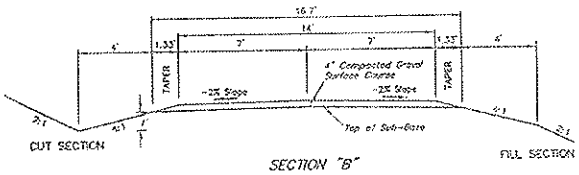
GRID NORTH



NOTE:
ACCESS CONTINUING PROFILE MUST SLOPE AWAY FROM ROAD WITH A MAXIMUM OF 3% FOR 25'. ALSO, MAXIMUM GRADE OF 8% IS REQUIRED BEYOND 50' OF ROAD



SECTION "A"



SECTION "B"

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Figure # 7

LORTEX 12 MIL LINER

Woven Reinforced High Density Polyethylene Fabric Coated With Low Density Polyethylene

PHYSICAL PROPERTIES AND SPECIFICATIONS

CONSTRUCTION:	12xD6 count per square inch Warp 950 Denier @ 50 Fill 1900 Denier @ 100
FABRIC GRADE:	Industrial, Carbon Black
STANDARD COATING COLORS:	Black
STANDARD COATING THICKNESS:	12 Mils +/- .15 mil each side LDRE
TOTAL THICKNESS:	12 Mils +/- .5 mil
NOMINAL WEIGHT:	5.3 oz/ square yard
NOMINAL TENSILE STRENGTH:	160 lbs W x 140 lbs Fill ASTM 1682-64 (Grab)
TEAR STRENGTH:	46 lbs W x 49 lbs Fill ASTM 2261-71 (Tongue)
MULLEN BURST STRENGTH:	325 psi ASTM D751-73
HYDROSTATIC RESISTANCE:	125 psi ASTM D1682-63
FLEX ABRASION:	5000+ cycles W 5000+ cycles Fill ASTM D1175-71
PUNCTURE RESISTANCE:	40 pounds FTMS 101B method 2065
IDENTIFICATION:	Printed in white ink "12 Mil" on 36 inch repeat

Appendix B

Ecological Site Photographs:
FBIR Grinnell 41X-1
FBIR Grinnell 34X-33
FBIR GeorgeBlackHawk 21X-6

Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 Environmental Assessment

XTO Energy, Inc.

2010 FBIR Grinnell 41X-1 Photographs

Photo 1: Corner #1 looking east.
UTM Coordinates: N5283365, E700061.

Photo 2: Corner #2 looking south.
UTM Coordinates: N5283362, E699974.

Photo 3: Corner #3 looking north.
UTM Coordinates: N5283436, E699971.

Photo 4: Corner #4 looking east.
UTM Coordinates: N5283483, E969.

Photo 5: Corner #6 looking south.
UTM Coordinates: N5283487, E700057.

Photo 6: Corner #7 looking south.
UTM Coordinates: N5283491, E700151.

2010 FBIR Grinnell 41X-1 Photographs

Photo 7: Corner #8 looking north.
UTM Coordinates: N5283442, E700154

Photo 8: Corner #9 looking west.
UTM Coordinates: N5283370, E700156.

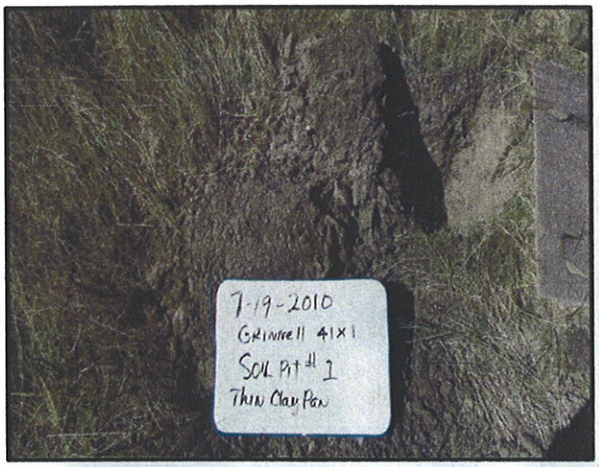


Photo 9: Ecological Site #1 –Thin Claypan. Soil pit on pad. UTM Coordinates: N5283467, E700019.

Photo 10: Ecological Site #1 – Thin Claypan. Soil pit #1 general appearance.

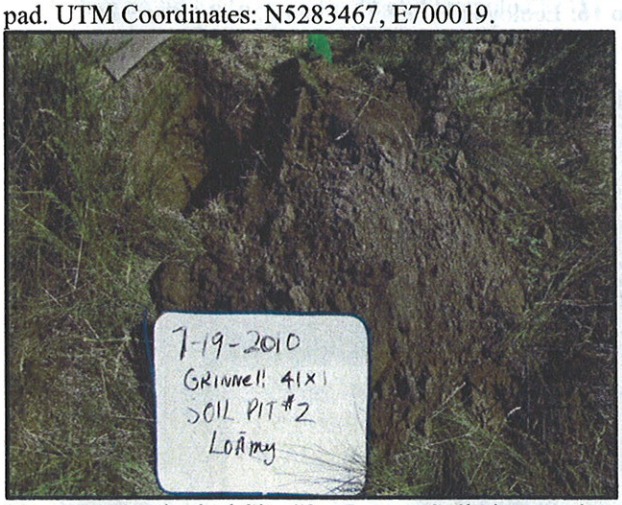


Photo 11: Ecological Site #2 – Loamy Soil pit on pad site. UTM Coordinates: N5283383, E699994

Photo 12: Ecological Site #2 – Loamy. Soil pit #2 general appearance.

2010 FBIR Grinnell 41X-1 Photographs

Photo 13: Ecological Site #3 – Loamy. Soil pit on pad site. UTM Coordinates: N5283407, E700050.

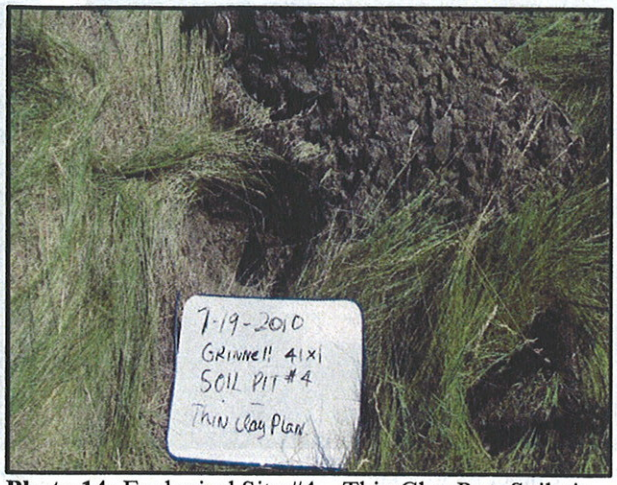


Photo 14: Ecological Site #4 – Thin Clay Pan. Soil pit on pad site. UTM Coordinates: N5283401, E700130.

Photo 15: Ecological Site #4 – Thin Clay Pan. Soil pit #4 general appearance.

Photo 16: Ecological Site #5 – Loamy. Soil pit on pad site. UTM Coordinates: N5283486, E700130.

Photo 17: Ecological Site #5 – Loamy. Soil pit #5 general appearance looking southeast.

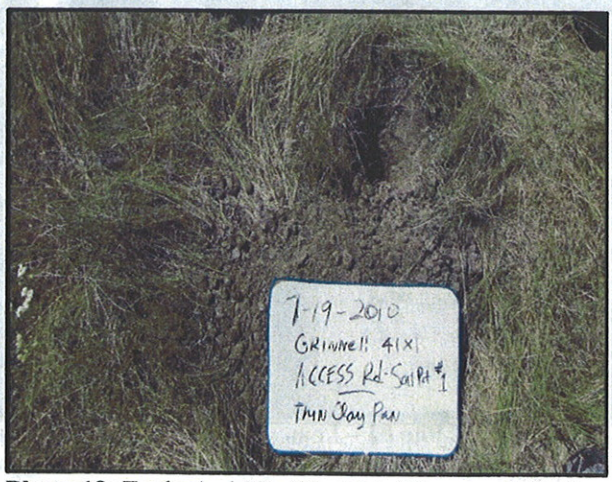


Photo 18: Ecological Site #6 – Thin Claypan. Soil pit on access road. UTM Coordinates: N5283510, E700144.

2010 FBIR Grinnell 41X-1 & Grinnell 34X-33 Photographs

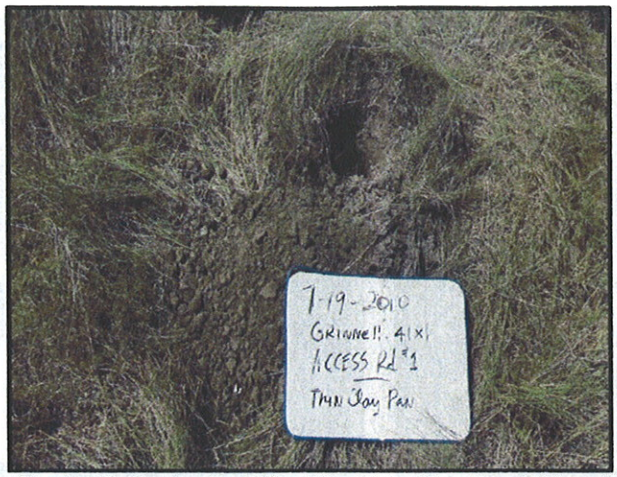


Photo 19: Ecological Site #6 – Thin Clay Pan (Grinnell 41X-1).
Soil pit on access road general appearance looking north.

GRINNELL 34X-33

Photo 1: Corner #1 looking north.
UTM Coordinates: N5283691, E700340.

Photo 2: Corner #2 looking south.
UTM Coordinates: N5283719, E700423.

Photo 3: Corner #3 looking west.
UTM Coordinates: N5283649, E700446.

Photo 4: Corner #4 looking west.
UTM Coordinates: N5283603, E700461.

2010 FBIR Grinnell 34X-33 Photographs

Photo 5: Corner #7 looking north.
UTM Coordinates: N5283546, E700287.

Photo 6: Corner #8 looking east.
UTM Coordinates: N5283592, E700272.

Photo 7: Corner #9 looking east.
UTM Coordinates: N5283662, E6700250.

Photo 8: Center of pad site looking west.
UTM Coordinates: N5283622, E700362.

Photo 9: Ecological Site #1 – Loamy. Soil pit on pad.
UTM Coordinates: N5283606, E700410.

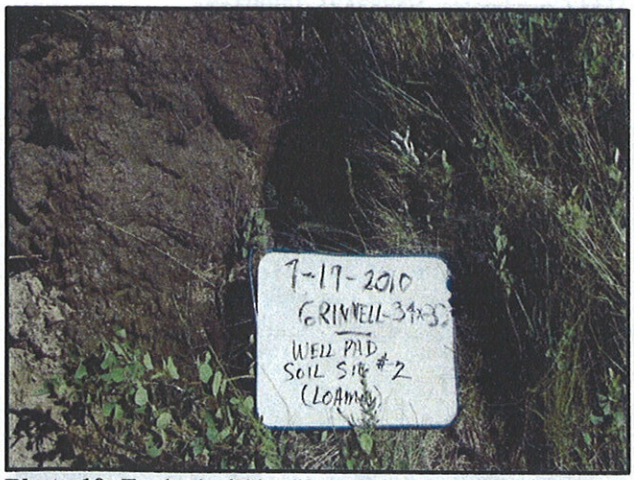


Photo 10: Ecological Site #2 – Loamy. Soil pit on pad site. UTM Coordinates: N5283719, E700423.

2010 FBIR Grinnell 34X-33 Photographs

Photo 11: Ecological Site #2 – Loamy. Soil pit #2 general appearance.

Photo 12: Ecological Site #3 – Loamy Overflow. Soil pit on pad site. UTM Coordinates: N5283692, E700360..

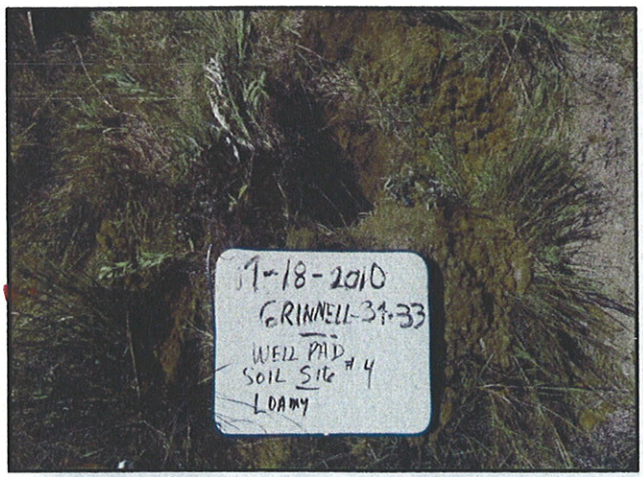


Photo 13: Ecological Site #4 – Loamy. Soil pit on pad site. UTM Coordinates: N5283603, E700461.

Photo 14: Ecological Site #4 – Loamy. Soil pit #4 general appearance looking northwest.

Photo 15: Ecological Site #5 – Thin loamy. Soil pit on pad site. UTM Coordinates: N5283671, E700258.

Photo 16: Ecological Site #5 – Thin loamy. Soil pit #5 general appearance.

2010 FBIR GeorgeBlackHawk 21X-6 Photographs

Photo 1: Corner #1 looking northwest.
UTM Coordinates: N5283421, E700783.

Photo 2: Corner #2 looking south.
UTM Coordinates: N5283376, E700860.

Photo 3: Corner #3 looking south.
UTM Coordinates: N5283315, E700824.

Photo 4: Corner #4 looking west.
UTM Coordinates: N5283271, E700800.

Photo 5: Corner #6 looking east.
UTM Coordinates: N5283315, E700722.

Photo 6: Corner #7 looking north.
UTM Coordinates: N5283361, E700641.

2010 FBIR GeorgeBlackHawk 21X-6 Photographs

Photo 7: Corner #8 looking south.
UTM Coordinates: N5283403, E700664.

Photo 8: Corner #9 looking east.
UTM Coordinates: N5283468, E700701.

Photo 9: Ecological Site #1 – Loamy. Soil pit on pad.
UTM Coordinates: N5283393, E700747.

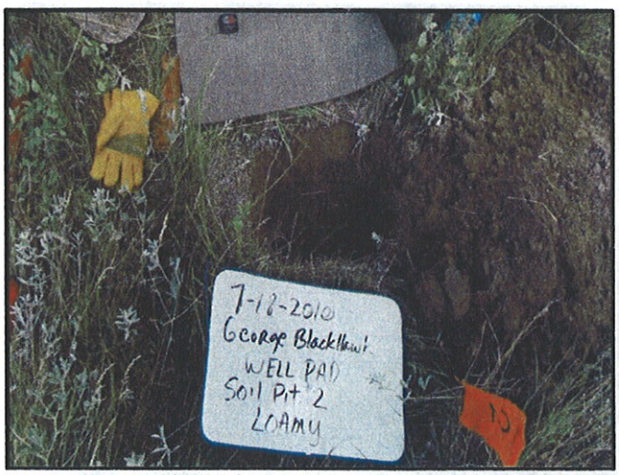


Photo 10: Ecological Site #2 – Loamy. Soil pit on pad.
UTM Coordinates: N5283426, E700744.

Photo 11: Ecological Site #2 – Loamy. Soil pit #2 general appearance.

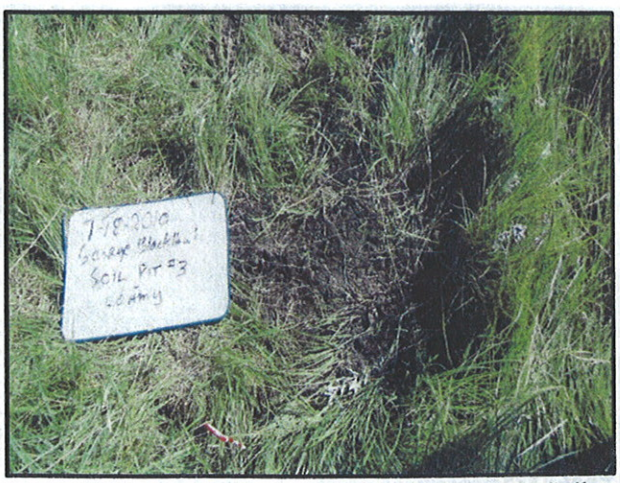


Photo 12: Ecological Site #3 – Loamy Overflow. Soil pit on pad. UTM Coordinates: N5283405, E700804.

2010 FBIR GeorgeBlackHawk 21X-6 Photographs

Photo 13: Ecological Site #3 – Loamy Overflow. Soil pit #3 general appearance.

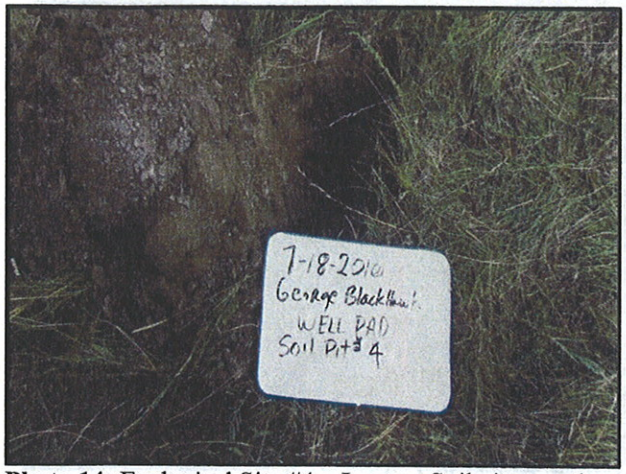


Photo 14: Ecological Site #4 – Loamy. Soil pit on pad site. UTM Coordinates: N5283380, E700840.

Photo 15: Ecological Site #4 – Loamy. Soil pit #4 general appearance.

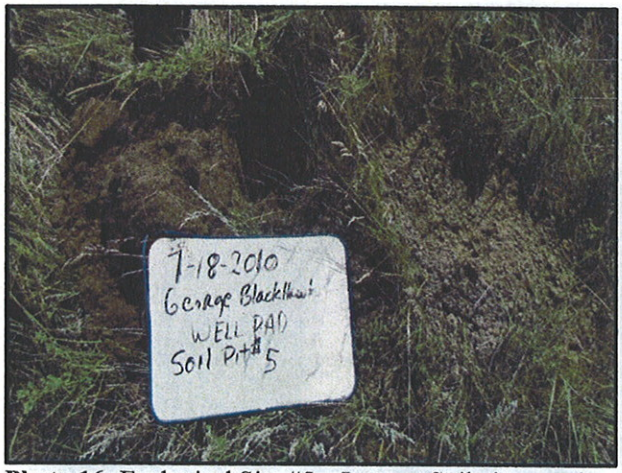


Photo 16: Ecological Site #5 – Loamy. Soil pit on pad site. UTM Coordinates: N5283307, E700763.

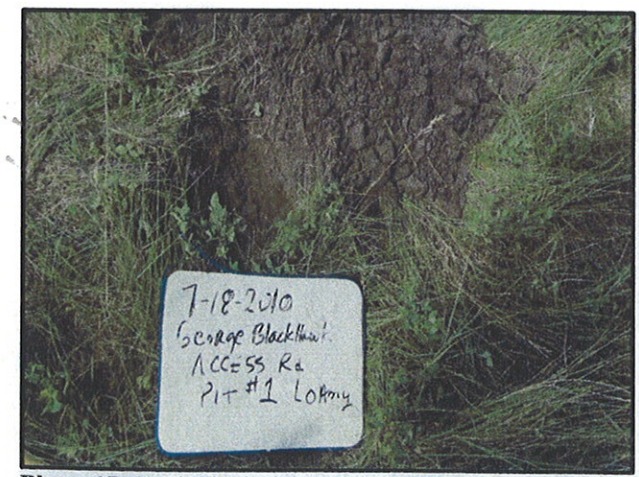


Photo 17: Ecological Site #6 – Loamy. Soil pit on access road. UTM Coordinates: N5283386, E700606.

Photo 18: Ecological Site #6 – Loamy. Soil pit #6 on access road looking northeast general appearance.

Appendix C

Ecological Worksheets:
- FBIR Grinnell 41X-1
- FBIR Grinnell 34X-33
- FBIR Grinnell 21X-6

Characteristics of Native Seed Mix

Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 Environmental Assessment

XTO Energy, Inc.

Ecological Worksheets

Site #1	**Well Pad Site**				
Date:	7/19/10	Slope:	2	Aspect:	South
Resource Area:	Grinnell 41X-1				
Legal Description:	NE1/4NE1/4NE1/4 Section 1				
UTM Coordinates:	N5283467 E700019				
Ecological Site:	Thin claypan				
Community Type:	Kentucky bluegrass, Needleandthread, Green needlegrass, Cudweed sagewort, Silverleaf scurfpea, Scentless mayweed, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Blue grama		*Bouteloua gracilis*
Plains reedgrass		*Calamagrostis montanensis*
Sun sedge		*Carex inops*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Western wheatgrass		*Pascopyrum smithii*
Green needlegrass		*Nassella viridula*
Sandberg bluegrass		*Poa secunda*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
White prairie aster		*Aster falcatus*
Purple prairie clover		*Dalea purpurea*
Curlycup gumweed		*Grindelia squarrosa*
Western red lily		*Lilium philadelphicum*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Goldenrod		*Solidago spp.*
Scentless mayweed		*Tripleurospermum perforata*
INVASIVES/WEEDS		
Wavyleaf thistle		*Cirsium undulatum*
Yellow sweetclover		*Melilotus officinalis*
Kentucky bluegrass		*Poa pratensis*
Tall tumblemustard		*Sisymbrium altissimum*
Fanweed		*Thlaspi arvense*
Western salsify		*Tragopogon dubius*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Winterfat		*Ceratoidies lanata*
Pincushion cactus		*Mamillara vivpara*
Western snowberry		*Symphoricarpos occidentalis*

Ecological Worksheets

Site #2	**Well Pad Site**				
Date:	7/19/10	Slope:	12	Aspect:	Northeast
Resource Area:	Grinnell 41X-1				
Legal Description:	NE1/4NE1/4NE1/4 Section 1				
UTM Coordinates:	N5283383 E699994				
Ecological Site:	Loamy				
Community Type:	Blue grama, Needleandthread, Western wheatgrass, Cudweed sagewort, Common yarrow, Silverleaf scurfpea, Fringed sagewort, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Blue grama		*Bouteloua gracilis*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Green needlegrass		*Nassella viridula*
Switchgrass		*Panicum virgatum*
Western wheatgrass		*Pascopyrum smithii*
Prairie dropseed		*Sporobolus heterolepis*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
White prairie aster		*Aster falcatus*
Lance-leaved paintbrush		lance-leaved paintbrush
Beeplant		beeplant
Black samson		*Echinacea angustifolia*
Blanket flower		*Gaillardia aristata*
Prairie smoke		*Geum triflorum*
Sunflower		*Helianthus spp.*
Dotted gayfeather		*Liatris punctata*
Western red lily		*Lilium philadelphicum*
Sand bladderpod		*Lesquerella arenosa*
Ivory stoneseed		*Lithosperum ruderale*
Biscuitroot		*Lomatium spp.*
Mint		*Mentha spp.*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Common groundsel		*Senecio vulgaris*
Goldenrod		*Solidago spp.*
Clover		*Trifolium spp.*
Scentless mayweed		*Tripleurospermum perforata*
INVASIVES/WEEDS		
Wavyleaf thistle		*Cirsium undulatum*
Yellow sweetclover		*Melilotus officinalis*
Kentucky bluegrass		*Poa pratensis*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Western snowberry		*Symphoricarpos occidentalis*
Poison ivy		*Toxicodendron rydbergii*

Ecological Worksheets

Site #3	**Well Pad Site**				
Date:	7/19/10	Slope:	5	Aspect:	Southeast
Resource Area:	Grinnell 41X-1				
Legal Description:	NE1/4NE1/4NE1/4 Section 1				
UTM Coordinates:	N5283407 E700050				
Ecological Site:	Loamy				
Community Type:	Kentucky bluegrass, Needleandthread, Western wheatgrass, Cudweed sagewort, Green sagewort, Silverleaf scurfpea, Scentless mayweed, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Blue grama		*Bouteloua gracilis*
Threadleaf sedge		*Carex filifolia*
Thickspike wheatgrass		*Elymus lanceolatus*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Green needlegrass		*Nassella viridula*
Western wheatgrass		*Pascopyrum smithii*
FORBS/LEGUMES		
Cudweed sagewort		*Artemisia ludoviciana*
Sand bladderpod		*Lesquerella arenosa*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Goldenrod		*Solidago spp.*
Scentless mayweed		*Tripleurospermum perforata*
INVASIVES/WEEDS		
Smooth brome		*Bromus inermis*
Flodman's thistle		*Cirsium flodmanii*
Yellow sweetclover		*Melilotus officinalis*
Kentucky bluegrass		*Poa pratensis*
Common dandelion		*Taraxacum officinale*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Western snowberry		*Symphoricarpos occidentalis*

Ecological Worksheets

Site #4	**Well Pad Site**				
Date:	7/19/10	Slope:	2	Aspect:	Southeast
Resource Area:	Grinnell 41X-1				
Legal Description:	NE1/4NE1/4NE1/4 Section 1				
UTM Coordinates:	N5283401 E700130				
Ecological Site:	Thin claypan				
Community Type:	Blue grama, Needleandthread, Green needlegrass, Cudweed sagewort, Silverleaf scurfpea, Scentless mayweed, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Blue grama		*Bouteloua gracilis*
Needleandthread grass		*Hesperostipa comata*
Plains muhly		*Muhlenbergia cuspidata*
Green needlegrass		*Nassella viridula*
Western wheatgrass		*Pascopyrum smithii*
Prairie dropseed		*Sporobolus heterolepis*
FORBS/LEGUMES		
Cudweed sagewort		*Artemisia ludoviciana*
Blanket flower		*Gaillardia aristata*
Prairie smoke		*Geum triflorum*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Common groundsel		*Senecio vulgaris*
Goldenrod		*Solidago spp.*
Scentless mayweed		*Tripleurospermum perforata*
INVASIVES/WEEDS		
Mustard		*Brassica spp.*
Kentucky bluegrass		*Poa pratensis*
SHRUBS/TREES		
Winterfat		*Ceratoidies lanata*
Prairie rose		*Rosa arkansana*
Western snowberry		*Symphoricarpos occidentalis*
Poison ivy		*Toxicodendron rydbergii*

Ecological Worksheets

Site #5	**Well Pad Site**				
Date:	7/19/10	Slope:	4	Aspect:	South
Resource Area:	Grinnell 41X-1				
Legal Description:	NE1/4NE1/4NE1/4 Section 1				
UTM Coordinates:	N5283486 E700130				
Ecological Site:	Loamy				
Community Type:	Blue grama, Kentucky bluegrass, Green needlegrass, Cudweed sagewort, Green sagewort, Silverleaf scurfpea, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Blue grama		*Bouteloua gracilis*
Needleandthread grass		*Hesperostipa comata*
Green needlegrass		*Nassella viridula*
Western wheatgrass		*Pascopyrum smithii*
FORBS/LEGUMES		
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
Prairie smoke		*Geum triflorum*
American licorice		*Glycyrrhiza lopidota*
Curlycup gumweed		*Grindelia squarrosa*
Sunflower		*Helianthus spp.*
Western red lily		*Lilium philadelphicum*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Goldenrod		*Solidago spp.*
White prairie aster		*Aster falcatus*
Scentless mayweed		*Tripleurospermum perforata*
INVASIVES/WEEDS		
Flodman's thistle		*Cirsium flodmanii*
Kentucky bluegrass		*Poa pratensis*
Western salsify		*Tragopogon dubius*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Western snowberry		*Symphoricarpos occidentalis*

Ecological Worksheets

Site #6	**Access Road**				
Date:	7/19/10	Slope:	4	Aspect:	Southeast
Resource Area:	Grinnell 41X-1				
Legal Description:	NE1/4NE1/4NE1/4 Section 1				
UTM Coordinates:	N5283510 E700144				
Ecological Site:	Thin claypan				
Community Type:	Western wheatgrass, Needleandthread, Green needlegrass, Cudweed sagewort, Silverleaf scurfpea, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Blue grama		*Bouteloua gracilis*
Buffalograss		*Bouteloua dactyloides*
Plains reedgrass		*Calamagrostis montanensis*
Sun sedge		*Carex inops*
Bearded wheatgrass		*Elymus caninus*
Thickspike wheatgrass		*Elymus lanceolatus*
Needleandthread grass		*Hesperostipa comata*
Green needlegrass		*Nassella viridula*
Western wheatgrass		*Pascopyrum smithii*
Sandberg bluegrass		*Poa secunda*
Prairie dropseed		*Sporobolus heterolepis*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
False dandelion		*Agoseris glauca*
Wild onion		*Allium ascalonicum*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
Milkvetch		*Astragalus spp.*
White prairie aster		*Aster falcatus*
Purple prairie clover		*Dalea purpurea*
Curlycup gumweed		*Grindelia squarrosa*
Dotted gayfeather		*Liatris punctata*
Western red lily		*Lilium philadelphicum*
Sand bladderpod		*Lesquerella arenosa*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Goldenrod		*Solidago spp.*
Scentless mayweed		*Tripleurospermum perforata*
INVASIVES/WEEDS		
Flodman's thistle		*Cirsium flodmanii*
Wavyleaf thistle		*Cirsium undulatum*
Yellow sweetclover		*Melilotus officinalis*
Tall tumblemustard		*Sisymbrium altissimum*
Fanweed		*Thlaspi arvense*
Western salsify		*Tragopogon dubius*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Winterfat		*Ceratoidies lanata*
Prairie rose		*Rosa arkansana*
Western snowberry		*Symphoricarpos occidentalis*
Poison ivy		*Toxicodendron rydbergii*

Ecological Worksheets

Site #1	**Well Pad Site**				
Date:	7/17-18/10	Slope:	7	Aspect:	East
Resource Area:	Grinnell 34X-33				
Legal Description:	SW1/4SW1/4 Section 33				
UTM Coordinates:	N5283606 E700410				
Ecological Site:	Loamy				
Community Type:	Blue grama, Western wheatgrass, Kentucky bluegrass, Green needlegrass, Cudweed sagewort, Silverleaf scurfpea, Green sagewort, Fringed sagwort, Western wheatgrass				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Blue grama		*Bouteloua gracilis*
Threadleaf sedge		*Carex filifolia*
Thickspike wheatgrass		*Elymus lanceolatus*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Western wheatgrass		*Pascopyrum smithii*
Prairie dropseed		*Sporobolus heterolepsis*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
False dandelion		*Agoseris glauca*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
White prairie aster		*Aster falcatus*
Purple prairie clover		*Dalea purpurea*
Black samson		*Echinacea angustifolia*
Prairie smoke		*Geum triflorum*
Western red lily		*Lilium philadelphicum*
Biscuitroot		*Lomatium spp.*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Clover		*Trifolium spp.*
Scentless mayweed		*Tripleurospermum perforata*
American vetch		*Vicia americana*
INVASIVES/WEEDS		
Mustard		*Brassica spp.*
False flax		*Camelina crantz*
Flodman's thistle		*Cirsium flodmanii*
Kentucky bluegrass		*Poa pratensis*
Tall tumblemustard		*Sisymbrium altissimum*
Common dandelion		*Taraxacum officinale*
Stinging nettle		*Urtica dioica*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Western snowberry		*Symphoricarpos occidentalis*
Poison ivy		*Toxicodendron rydbergii*

Ecological Worksheets

Site #2	**Well Pad Site**				
Date:	7/17-18/10	Slope:	4	Aspect:	Northwest
Resource Area:	Grinnell 34X-33				
Legal Description:	SW1/4SW1/4 Section 33				
UTM Coordinates:	N5283719 E700423				
Ecological Site:	Loamy Overflow				
Community Type:	Green needlegrass, Big bluestem, Western wheatgrass, Common yarrow, Cudweed sagewort, Mint, Silverleaf scurfpea, Goldenrod, Poison ivy, Prairie rose, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Big bluestem		*Andropogon gerardii*
Threadleaf sedge		*Carex filifolia*
Bearded wheatgrass		*Elymus caninus*
Porcupine grass		*Hesperostipa spartea*
Green needlegrass		*Nassella viridula*
Switchgrass		*Panicum virgatum*
Western wheatgrass		*Pascopyrum smithii*
Sandberg bluegrass		*Poa secunda*
Indian grass		*Sorghastrum nutans*
Baltic rush		Juncus balticus
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Groundplum milkvetch		*Astragalus crassicarpus*
Milkvetch		*Astragalus spp.*
White prairie aster		*Aster falcatus*
Northern bedstraw		*Galium boreale*
Dotted gayfeather		*Liatris punctata*
Rush skeletonweed		*Lygodesmia juncea*
Mint		*Mentha spp.*
Silverleaf scurfpea		*Psoralea argophylla*
Goldenrod		*Solidago spp.*
Scentless mayweed		*Tripleurospermum perforata*
INVASIVES/WEEDS		
Flodman's thistle		*Cirsium flodmanii*
Wavyleaf thistle		*Cirsium undulatum*
Pepperweed		*Lepidium spp.*
Kentucky bluegrass		*Poa pratensis*
Western salsify		*Tragopogon dubius*
SHRUBS/TREES		
Prairie rose		*Rosa arkansana*
Western snowberry		*Symphoricarpos occidentalis*

Ecological Worksheets

Site #3	**Well Pad Site**				
Date:	7/17-18/10	Slope:	3	Aspect:	Northeast
Resource Area:	Grinnell 34X-33				
Legal Description:	SW1/4SW1/4 Section 33				
UTM Coordinates:	N5283692 E700360				
Ecological Site:	Loamy Overflow				
Community Type:	Green needlegrass, Kentucky bluegrass, Little bluestem, Common yarrow, Cudweed sagewort, Green sagewort, Silverleaf scurfpea, Western snowberry, Silver buffaloberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Blue grama		*Bouteloua gracilis*
Smooth brome		*Bromus inermis*
Needleandthread grass		*Hesperostipa comata*
Green needlegrass		*Nassella viridula*
Little bluestem		*Schizachyrium scoparium*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
White prairie aster		*Aster falcatus*
Black samson		*Echinacea angustifolia*
Prairie smoke		*Geum triflorum*
milkwort		*Glaux spp.*
Curlycup gumweed		*Grindelia squarrosa*
Hairy goldenaster		*Heterotheca villosa*
Dotted gayfeather		*Liatris punctata*
Western red lily		*Lilium philadelphicum*
Penstemon		*Pentemon spp.*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Common groundsel		*Senecio vulgaris*
Goldenrod		*Solidago spp.*
Clover		*Trifolium spp.*
Scentless mayweed		*Tripleurospermum perforata*
American vetch		*Vicia americana*
INVASIVES/WEEDS		
Mustard		*Brassica spp.*
Smooth brome		*Bromus inermis*
Wavyleaf thistle		*Cirsium undulatum*
Pepperweed		*Lepidium spp.*
Kentucky bluegrass		*Poa pratensis*
Western salsify		*Tragopogon dubius*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Silver buffaloberry		*Shepherdia argentea*
Poison ivy		*Toxicodendron rydbergii*

Ecological Worksheets

Site #4	**Well Pad Site**				
Date:	7/17-18/10	Slope:	2	Aspect:	North
Resource Area:	Grinnell 34X-33				
Legal Description:	SW1/4SW1/4 Section 33				
UTM Coordinates:	N5283714 E700386				
Ecological Site:	Loamy				
Community Type:	Blue grama, Needleandthread, Green needlegrass, Common yarrow, Green sagewort, Cudweed sagewort, Silverleaf buffaloberry, Poison ivy				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Blue grama		*Bouteloua gracilis*
Smooth brome		*Bromus inermis*
Threadleaf sedge		*Carex filifolia*
Needleandthread grass		*Hesperostipa comata*
Green needlegrass		*Nassella viridula*
Western wheatgrass		*Pascopyrum smithii*
Little bluestem		*Schizachyrium scoparium*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
Wild onion		*Allium ascalonicum*
Green sagewort		*Artemisia dranunculus*
Cudweed sagewort		*Artemisia ludoviciana*
White prairie aster		*Aster falcatus*
Purple prairie clover		*Dalea purpurea*
Black samson		*Echinacea angustifolia*
Prairie smoke		*Geum triflorum*
Woolly indianwheat		*Plantago patagonica*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Goldenrod		*Solidago spp.*
Scentless mayweed		*Tripleurospermum perforata*
INVASIVES/WEEDS		
Bull thistle		*Cirsium vulgare*
Smooth brome		*Bromus inermis*
Wavyleaf thistle		*Cirsium undulatum*
Prickly lettuce		*Lactuca serriola*
Kentucky bluegrass		*Poa pratensis*
Fanweed		*Thlaspi arvense*
Western salsify		*Tragopogon dubius*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Shrubby cinquefoil		*Potentilla fruticosa*
Silver buffaloberry		*Shepherdia argentea*
Poison ivy		*Toxicodendron rydbergii*

Ecological Worksheets

Site #5	**Well Pad Site**				
Date:	7/17-18/10	Slope:	5	Aspect:	East
Resource Area:	Grinnell 34X-33				
Legal Description:	SW1/4SW1/4 Section 33				
UTM Coordinates:	N5283671 E700258				
Ecological Site:	Thin Loamy				
Community Type:	Blue grama, Sideoats grama, Thickspike wheatgrass, Needleandthread, Green needlegrass, Common yarrow, Green sagewort, Cudweed sagewort, Silverleaf scurfpea, Green rabbitbrush				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Sideoats grama		*Bouteloua curtipendula*
Buffalograss		*Bouteloua dactyloides*
Blue grama		*Bouteloua gracilis*
Plains reedgrass		*Calamagrostis montanensis*
Threadleaf sedge		*Carex filifolia*
Pen sedge		*Carex pensylvanica*
Thickspike wheatgrass		*Elymus lanceolatus*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Plains muhly		*Muhlenbergia cuspidata*
Green needlegrass		*Nassella viridula*
Western wheatgrass		*Pascopyrum smithii*
Sandberg bluegrass		*Poa secunda*
Prairie dropseed		*Sporobolus heterolepis*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
False dandelion		*Agoseris glauca*
Roadside agrimonia		*Agrimonia striata*
Wild onion		*Allium ascalonicum*
Rose pussytoes		*Antennaria rosea*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
Groundplum milkvetch		*Astragalus crassicarpus*
Milkvetch		*Astragalus spp.*
White prairie aster		*Aster falcatus*
Harebell		*Campanula rotundiflora*
Black samson		*Echinacea angustifolia*
Buckwheat		*Eriogonum spp.*
Prairie smoke		*Geum triflorum*
American licorice		*Glycyrrhiza lepidota*
Curlycup gumweed		*Grindelia squarrosa*
Hairy goldenaster		*Heterotheca villosa*
Dotted gayfeather		*Liatris punctata*
Western red lily		*Lilium philadelphicum*
Rush skeletonweed		*Lygodesmia*
Hood phlox		*Phlox hoodii*
Woolly indianwheat		*Plantago patagonica*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Prairie coneflower		*Ratibida columnifera*

Site #5	**Well Pad Site**	
Goldenrod		*Solidago spp.*
Scarlet globemallow		*Sphaeralcea coccinea*
INVASIVES/WEEDS		
Flodman's thistle		*Cirsium flodmanii*
Western sticktight		*Lappula occidentalis*
Kentucky bluegrass		*Poa pratensis*
Common dandelion		*Taraxacum officinale*
Western salsify		*Tragopogon dubius*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Green rabbitbrush		*Chrysothamnus vicidiflorus*
Winterfat		*Ceratoidies lanata*

Ecological Worksheets

Site #1	**Well Pad Site**				
Date:	7/18/10	Slope:	4	Aspect:	Southwest
Resource Area:	George BlackHawk 21X-6				
Legal Description:	NW1/4NE1/4NW1/4 Section 6				
UTM Coordinates:	N5283392 E700694				
Ecological Site:	Loamy				
Community Type:	Needleandthread, Prairie junegrass, Kentucky bluegrass, Cudweed sagewort, Green sagewort, Silverleaf scurfpea, Prairie coneflower, Fringed sagewort, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Plains reedgrass		*Calamagrostis montanensis*
Prairie sandreed		*Calamovilfa longifolia*
Pen sedge		*Carex pensylvanica*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koleria macrantha*
Western wheatgrass		*Pascopyrum smithii*
Green needlegrass		*Nassella viridula*
Sandberg bluegrass		*Poa secunda*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
Wild onion		*Allium ascalonicum*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
Milkvetch		*Astragalus spp.*
White prairie aster		*Aster falcatus*
Purple prairie clover		*Dalea purpurea*
Black samson		*Echinacea angustifolia*
Northern bedstraw		*Galium boreale*
Prairie smoke		*Geum triflorum*
Sunflower		*Helianthus spp.*
Dotted gayfeather		*Liatris punctata*
Western red lily		*Lilium philadelphicum*
Rush skeletonweed		*Lygodesmia juncea*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Goldenrod		*Solidago spp.*
Clover		*Trifolium spp.*
INVASIVES/WEEDS		
Flodman's thistle		*Cirsium flodmanii*
Kentucky bluegrass		*Poa pratensis*
Common dandelion		*Taraxacum officinale*
Fanweed		*Thlaspi arvense*
Western salsify		*Tragopogon dubius*
SHRUBS/TREES		
Silver sagebrush		*Artemisia cana*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Silver buffaloberry		*Shepherdia argentea*
Western snowberry		*Symphoricarpos occidentalis*
Poison ivy		*Toxicodendron rydbergii*

Ecological Worksheets

Site #2	**Well Pad Site**				
Date:	7/18/10	Slope:	9	Aspect:	North
Resource Area:	George BlackHawk 21X-6				
Legal Description:	NW1/4NE1/4NW1/4 Section 6				
UTM Coordinates:	N5283426 E700744				
Ecological Site:	Loamy				
Community Type:	Green needlegrass, Western wheatgrass, Prairie junegrass, Little bluestem, Cudweed sagewort, Green sagewort, Fringed sagewort, Western snowberry, Silver buffaloberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Big bluestem		*Andropogon gerardii*
Sideoats grama		*Bouteloua curtipendula*
Threadleaf sedge		*Carex filifolia*
Sun sedge		*Carex inops*
Thickspike wheatgrass		*Elymus lanceolatus*
Prairie junegrass		*Koeleria macrantha*
Green needlegrass		*Nassella viridula*
Western wheatgrass		*Pascopyrum smithii*
Little bluestem		*Schizachyrium scoparium*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
White prairie aster		*Aster falcatus*
Purple prairie clover		*Dalea purpurea*
Black samson		*Echinacea angustifolia*
Milkwort		*Glaux spp.*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie buttercup		*Ranunculus rhombodieus*
Prairie coneflower		*Ratibida columnifera*
Western red lily		*Lilium philadelphicum*
Goldenrod		*Solidago spp.*
INVASIVES/WEEDS		
False flax		*Camelina crantz*
Kentucky bluegrass		*Poa pratensis*
SHRUBS/TREES		
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Silver buffaloberry		*Shepherdia argentea*
Western snowberry		*Symphoricarpos occidentalis*
Poison ivy		*Toxicodendron rydbergii*

Ecological Worksheets

Site #3	**Well Pad Site**				
Date:	7/18/10	Slope:	4	Aspect:	North
Resource Area:	George BlackHawk 21X-6				
Legal Description:	NW1/4NE1/4NW1/4 Section 6				
UTM Coordinates:	N5283405 E700804				
Ecological Site:	Loamy overflow				
Community Type:	Green needlegrass, Prairie sandreed, Porcupine grass, Cudweed sagewort, Green sagewort, Silverleaf scurfpea, Western snowberry, Prairie rose				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Prairie sandreed		*Calamovilfa longifolia*
Porcupine grass		*Hesperostipa spartea*
Green needlegrass		*Nassella viridula*
Sandberg bluegrass		*Poa secunda*
FORBS/LEGUMES		
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
White prairie aster		*Aster falcatus*
Purple prairie clover		*Dalea purpurea*
Black samson		*Echinacea angustifolia*
Prairie smoke		*Geum triflorum*
Sunflower		*Helianthus spp.*
Western red lily		*Lilium philadelphicum*
Biscuitroot		*Lomatium spp.*
Mint		*Mentha spp.*
Stiff goldenrod		*Oligoneoron rigidum*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
INVASIVES/WEEDS		
Flodman's thistle		*Cirsium flodmanii*
Wavyleaf thistle		*Cirsium undulatum*
SHRUBS/TREES		
Silver sagebrush		*Artemisia cana*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Western snowberry		*Symphoricarpos occidentalis*

Ecological Worksheets

Site #4	**Well Pad Site**				
Date:	7/18/10	Slope:	1	Aspect:	North
Resource Area:	George BlackHawk 21X-6				
Legal Description:	NE1/4NE1/4NE1/4 Section 1				
UTM Coordinates:	N5283380 E700840				
Ecological Site:	Loamy				
Community Type:	Prairie sandreed, Green needlegrass, Porcupine grass, Needleandthread, Cudweed sagewort, Green sagewort, Prairie rose, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Green needlegrass		*Nassella viridula*
Switchgrass		*Panicum virgatum*
Western wheatgrass		*Pascopyrum smithii*
FORBS/LEGUMES		
Wild onion		*Allium ascalonicum*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
Milkvetch		*Astragalus spp.*
Harebell		*Campanula rotundifolia*
Purple prairie clover		*Dalea purpurea*
Black samson		*Echinacea angustifolia*
Hairy goldenaster		*Heterotheca villosa*
Western red lily		*Lilium philadelphicum*
Sand bladderpod		*Lesquerella arenosa*
Woolly indianwheat		*Plantago patagonica*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Common groundsel		*Senecio vulgaris*
Clover		*Trifolium spp.*
INVASIVES/WEEDS		
Bull thistle		*Cirsium vulgare*
Mustard		*Brassica spp.*
Wavyleaf thistle		*Cirsium undulatum*
Kentucky bluegrass		*Poa pratensis*
SHRUBS/TREES		
Silver sagebrush		*Artemisia cana*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Western snowberry		*Symphoricarpos occidentalis*

Ecological Worksheets

Site #5	**Well Pad Site**				
Date:	7/18/10	Slope:	1	Aspect:	Northwest
Resource Area:	George BlackHawk 21X-6				
Legal Description:	NE1/4NE1/4NE1/4 Section 1				
UTM Coordinates:	N5283307 E700764				
Ecological Site:	Loamy				
Community Type:	Green needlegrass, Kentucky bluegrass, Prairie sandreed, Needleandthread, Cudweed sagewort, Silverleaf scurfpea, Prairie rose, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Plains reedgrass		*Calamagrostis montanensis*
Prairie sandreed		*Calamovilfa longifolia*
Pen sedge		*Carex pensylvanica*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Green needlegrass		*Nassella viridula*
Western wheatgrass		*Pascopyrum smithii*
Sandberg bluegrass		*Poa secunda*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
Wild onion		*Allium ascalonicum*
Green sagewort		*Artemisia dranunculus*
Cudweed sagewort		*Artemisia ludoviciana*
Milkvetch		*Astragalus spp.*
White prairie aster		*Aster falcatus*
Purple prairie clover		*Dalea purpurea*
Black samson		*Echinacea angustifolia*
Northern bedstraw		*Galium boreale*
Prairie smoke		*Geum triflorum*
Sunflower		*Helianthus spp.*
Dotted gayfeather		*Liatris punctata*
Western red lily		*Lilium philadelphicum*
Rush skeletonweed		*Lygodesmia juncea*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Goldenrod		*Solidago spp.*
Clover		*Trifolium spp.*
American vetch		*Vicia americana*
INVASIVES/WEEDS		
Bull thistle		*Cirsium vulgare*
Flodman's thistle		*Cirsium flodmanii*
Kentucky bluegrass		*Poa pratensis*
SHRUBS/TREES		
Prairie rose		*Rosa arkansana*
Western snowberry		*Symphoricarpos occidentalis*
Poison ivy		*Toxicodendron rydbergii*

Ecological Worksheets

Site #6	**Access Road**				
Date:	7/18/10	Slope:	2	Aspect:	North
Resource Area:	George BlackHawk 21X-6				
Legal Description:	NE1/4NE1/4NE1/4 Section 1				
UTM Coordinates:	N5283386 E700606				
Ecological Site:	Loamy				
Community Type:	Needleandthread, Kentucky bluegrass, Prairie junegrass, Cudweed sagewort, Green sagewort, Silverleaf scurfpea, Fringed sagewort, Western snowberry				

PLANT COMPOSITION Common Name		Scientific Name
GRASSES		
Big bluestem		*Andropogon gerardii*
Sideoats grama		*Bouteloua curtipendula*
Plains reedgrass		*Calamagrostis montanensis*
Prairie sandreed		*Calamovilfa longifolia*
Sun sedge		*Carex inops*
Pen sedge		*Carex pensylvanica*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Green needlegrass		*Nassella viridula*
Western wheatgrass		*Pascopyrum smithii*
Sandberg bluegrass		*Poa secunda*
Little bluestem		*Schizachyrium scoparium*
FORBS/LEGUMES		
Common yarrow		*Achillea millefolium*
Wild onion		*Allium ascalonicum*
Green sagewort		*Artemisia dracunculus*
Cudweed sagewort		*Artemisia ludoviciana*
Groundplum milkvetch		*Astragalus crassicarpus*
Milkvetch		*Astragalus spp.*
White prairie aster		*Aster falcatus*
Purple prairie clover		*Dalea purpurea*
Black samson		*Echinacea angustifolia*
Buckwheat		*Eriogonum spp.*
Northern bedstraw		*Galium boreale*
Prairie smoke		*Geum triflorum*
Sunflower		*Helianthus spp.*
Dotted gayfeather		*Liatris punctata*
Western red lily		*Lilium philadelphicum*
Rush skeletonweed		*Lygodesmia juncea*
Silverleaf scurfpea		*Psoralea argophylla*
Prairie coneflower		*Ratibida columnifera*
Goldenrod		*Solidago spp.*
Scarlet globemallow		*Sphaeralcea coccinea*
Clover		*Trifolium spp.*
INVASIVES/WEEDS		
Japanese brome		*Bromus inermis*
Flodman's thistle		*Cirsium flodmanii*
Foxtail barley		*Hordeum jubatum*
Western sticktight		*Lappula occidentaili*
Pepperweed		*Lepidium spp.*
Yellow sweetclover		*Melilotus officinalis*

Site #6	**Access Road**	
Kentucky bluegrass		*Poa pratensis*
Common dandelion		*Taraxacum officinale*
Fanweed		*Thlaspi arvense*
Western salsify		*Tragopogon dubius*
SHRUBS/TREES		
Silver sagebrush		*Artemisia cana*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Western snowberry		*Symphoricarpos occidentalis*
Poison ivy		*Toxicodendron rydbergii*

Table C1: ***Characteristics of the native seed mix to be used for reclamation at the proposed Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 project sites.***

Common Name	Plant Species	Suggested Variety[1]	Pounds (PLS)[2]	Seeds per Pound	Composition	Preferred soil type	Notes[1,3]
Cool Season Grasses							
Slender wheatgrass	*Elymus trachycaulus* ssp. *trachycaulus*	Primer	0.5	135,000	10%	sandy to clayey	Moderate drought tolerance. Rapid establishment, short-live. Saline-tolerant and adapted to a wide range of sites. Useful where quick, native, non-aggressive perennial cover is desired.
Western wheatgrass	*Pascopyrum smithii*	Mandan 456	2.4	115,000	30%	silty-loamy to clay	Drought tolerant. Fairly easy to moderate establishment, long-lived. Useful for slightly saline, erosive soils where long-lived hardy vegetation is desired and rapid establishment is not.
Prairie junegrass	*Koeleria macrantha*	NA	0.1	2,315,000	10%	sandy	Drought tolerant. Easy establishment. Useful where early season forage is desired and erosion is not a severe problem. Not tolerant of heavy early season grazing.
Green needlegrass	*Nassella viridula*	Lodorm	1.2	167,840	20%	wide-range	Drought tolerant. Establishes on a wide variety of sites, long-lived, fibrous deep root system. Moderately palatable to livestock and wildlife year-round.
Warm season grasses							
Blue grama	*Bouteloua gracilis*	Bad River	0.2	724,400	10%	fine-textured rolling uplands	Drought resistant. Easy establishment. Saline tolerant. Sod-forming with seedling vigor and leafiness.
Sideoats grama	*Bouteloua curtipendula*	Killdeer	0.6	159,200	10%	fine to coarse textured	Moderately drought tolerant. Excellent winter hardiness. Saline tolerant. High palatability during spring and summer.
Little bluestem	*Andropogon scoparius*	Aldous, Blaze, Camper	0.4	240,670	10%	wide-range	Moderately drought tolerant. Long-lived bunchgrass with deep fibrous root system. Intolerant of saline or wetland conditions.
		Total	**5.4**		**100%**		

[1] USGS 2006.
[2] PLS = pound of pure live seed
[3] Source: Goodwin and Sheley 2003.

Appendix D

Soil Data Summaries:
- FBIR Grinnell 41X-1
- FBIR Grinnell 34X-33
- FBIR Grinnell 21X-6

Unified Soil Classification System

Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 Environmental Assessment

XTO Energy, Inc.

Table D1: ***A summary of soil attributes for ecological sites at the proposed Grinnell 41X-1 well pad and access road.***

Site ID	Soil Pit Location (UTM)*	SMU	Soil Series Component	Texture / Family / Taxonomic Class	% Slope	Aspect	Landform / Position	Depth (inch)	Parent Material	Ecological Site
Well Pad										
1	N5283467 E700019	62B	Rhoades silt loam	Fn-smect,f,Leptic Vertic Natrustolls	2	S	Hills/Alluvial flats	> 60	Residuum / Siltstone	Thin Claypan
2	N5283383 E699994	52C	Morton silt loam	Fn-si,m,SA,f,Typic Argiustolls	12	NE	Hills/Backslope	40-60	Residuum / Siltstone	Loamy
3	N5283407 E700050	52B	Morton silt loam	Fn-si,m,SA,f Typic Argiustolls	5	SE	Hills/Alluvial flats	40-60	Residuum / Siltstone	Loamy
4	N5283401 E700130	62B	Rhoades silt loam	Fn-smect,f,Leptic Vertic Natrustolls	2	SE	Hills/Alluvial flats	> 60	Residuum / Siltstone	Thin Claypan
5	N5283486 E700130	52B	Morton silt loam	Fn-si,m,SA,f Typic Argiustolls	4	S	Hills/Backslope	40-60	Residuum / Siltstone	Loamy
Access Road										
6	N5283510 E700144	62B	Rhoades silt loam	Fn-smect,f,Leptic Vertic Natrustolls	4	SE	Hills/Alluvial flats	> 60	Residuum / Siltstone	Thin Claypan

Table D2: ***A summary of soil attributes for ecological sites at the proposed Grinnell 34X-33 well pad.***

Site ID	Soil Pit Location (UTM)*	SMU	Soil Series Component	Texture / Family / Taxonomic Class	% Slope	Aspect	Landform / Position	Depth (inch)	Parent Material	Ecological Site
Well Pad										
1	N5283606 E700410	52C	Morton silt loam	Fn-si,m,SA,f Typic Argiustolls	7	E	Hills/Backslope	40-60	Residuum / Siltstone	Loamy
2	N5283593 E700296	4B	Arnegard loam	Fn-lo,m,SA,f,Pachic Haplustolls	4	NW	Hills/Swale	> 60	Alluvium / Mixed Sed	Loamy Overflow
3	N5283692 E700360	4B	Arnegard loam	Fn-lo,m,SA,f,Pachic Haplustolls	3	NE	Hills/Swale	> 60	Alluvium / Mixed Sed	Loamy Overflow
4	N5283714 E700386	52B	Morton silt loam	Fn-si,m,SA,f,Typic Argiustolls	2	N	Hills/Backslope	40-60	Residuum / Siltstone	Loamy
5	N5283671 E700257	73C	Cherry silt loam	Fn-si,m,SA,f,Typic Haplustepts	5	E	Hills/Toeslope	>60	Alluvium / Mixed Sed	Thin Loamy

Table D3: ***A summary of soil attributes for ecological sites at the proposed GeorgeBlackHawk 21X-6 well pad and access road.***

Site ID	Soil Pit Location (UTM)*	SMU	Soil Series Component	Texture / Family / Taxonomic Class	% Slope	Aspect	Landform / Position	Depth (inch)	Parent Material	Ecological Site
Well Pad										
1	N5283392 E700694	101B	Armor Loam	Fn-lo,m,SA,f,Typic Haplustolls	4	SW	Hills/Backslope	40-60	Residuum / Siltstone	Loamy
2	N5283426 E700744	101C	Shambo loam	Fn-lo,m,SA,f,Typic Haplustolls	9	N	Hills/Backslope	> 60	Alluvium / Mixed Sed	Loamy
3	N5283405 E700804	4B	Arnegard loam	Fn-lo,m,SA,f,Pachic Haplustolls	4	N	Hills/Swale	> 60	Alluvium / Mixed Sed	Loamy Overflow
4	N5283380 E700840	52B	Morton silt loam	Fn-si,m,SA,f Typic Argiustolls	1	N	Hills/Backslope	40-60	Residuum / Siltstone	Loamy
5	N5283307 E700764	101B	Shambo loam	Fn-lo,m,SA,f,Typic Haplustolls	1	NW	Hills/ Summit	> 60	Alluvium / Mixed Sed	Loamy
Access Road										
6	N5283386 E700606	52B	Morton silt loam	Fn-si,m,SA,f Typic Argiustolls	2	N	Hills/Depression	40-60	Residuum / Siltstone	Loamy

Figure D1: ***Definitions of the Unified Soil Classification System***

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well-graded gravels or gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amt. of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size)	CLEAN SANDS (Little or no fines)	SW	Well-graded sands or gravelly sands, little or no fines.
			SP	Poorly-graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amt. of fines)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silt-clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

PARTICLE SIZE LIMITS

SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Coarse		

No. 200 No. 40 No. 10 No. 4 ¾ in. 3 in. 12 in.

U. S. STANDARD SIEVE SIZE

Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

1969 A.W.E

Figure G 160

Appendix E

Cultural Resources Documentation:
FBIR Grinnell 41X-1
FBIR Grinnell 34X-33
FBIR Grinnell 21X-6

Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 Environmental Assessment

XTO Energy, Inc.

United States Department of the Interior

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

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
DESCRM
MC-208

AUG 19 2010

Perry 'No Tears' Brady, THPO
Mandan, Hidatsa and Arikara Nation
404 Frontage Road
New Town, North Dakota 58763

Dear Mr. Brady:

We have considered the potential effects on cultural resources of three proposed oil well pads and access roads in Dunn County, North Dakota. Approximately 48.1 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the areas depicted in the enclosed reports. No historic properties were located that appear to possess the quality of integrity and meet at least one of the criteria (36 CFR 60.4) for inclusion on the National Register of Historic Places. One "avoidance area" was located that may qualify for protection under the American Indian Religious Freedom Act (42 USC 1996).

As the surface management agency, and as provided for in 36 CFR 800.5, we have therefore reached a determination of **no historic properties affected** for these undertakings. Catalogued as **BIA Case Number AAO-1733/FB/10,** the proposed undertakings, locations, and project dimensions are described in the following reports:

Klinner, Duane
(2010) FBIR George Black Hawk 31x-6 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.

(2010) FBIR Young Bear 31x-9 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.

(2010) FBIR Grinnell 34x-33 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.

If your office concurs with this determination, consultation will be completed under the National Historic Preservation Act and its implementing regulations. The Standard Conditions of Compliance will be adhered to.

If you have any questions, please contact Dr. Carson N. Murdy, Regional Archaeologist, at (605) 226-7656.

Sincerely,

ACTING Regional Director

Enclosures

cc: Chairman, Three Affiliated Tribes
Superintendent, Fort Berthold Agency

Three Affiliated Tribes
MANDAN * HIDATSA * ARIKARA

TRIBAL HISTORIC PRESERVATION
Mandan Hidatsa Arikara
Perry 'No Tears' Brady, Director
404 Frontage Road,
New Town, North Dakota 58763
Ph/701-862-2474 fax/701-862-2490

August 25, 2010

Dr. Carson Murdy
Great Plains Regional Office
115 Fourth Avenue S.E.
Aberdeen, South Dakota 57401

RE: Recommendation and Concurrence

As Director of the Tribal Historic Preservation Office and the Tribal Historical Preservation Officer, representing the Mandan Hidatsa Arikara Nation I Concur with **BIA Case Number AAO-1733/FB/10**

Klinner, Duane
(2010) FBIR George Black Hawk 31x-6 Well Pads and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.

(2010) FBIR Young Bear 31x-9 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota KLJ Cultural Resources for XTO Energy, Fort Worth, TX.

(2010) FBIR Grinnell 34x-33 Well Pad and Access Road: A Class III Cultural Resource Inventory Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth TX.

I you have any questions or need additional information, you can contact me at Office # (701) 862-2474 or Cell # (701) 421-0547

Sincerely:

Perry "No Tears) Brady
THPO Director

Cc. file

United States Department of the Interior

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

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
DESCRM
MC-208

DEC 2 7 2010

Elgin Crows Breast, THPO
Mandan, Hidatsa and Arikara Nation
404 Frontage Road
New Town, North Dakota 58763

Dear Mr. Crows Breast:

We have considered the potential effects on cultural resources of four proposed oil well pads and access roads in Dunn County, North Dakota. Approximately 108.1 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the areas depicted in the enclosed reports. Seven archaeological sites (32DU1518, 32DU1519, 32DU1520, 32DU1521, 32DU1522, 32DU1523) were located that may possess the quality of integrity and meet at least one of the criteria (36 CFR 60.4) for inclusion on the National Register of Historic Places. No properties were located that appear to qualify for protection under the American Indian Religious Freedom Act (42 USC 1996).

As the surface management agency, and as provided for in 36 CFR 800.5, we have therefore reached a determination of **no historic properties affected** for these undertakings, as the archaeological sites will be avoided. Catalogued as **BIA Case Number AAO-1733/FB/10,** the proposed undertakings, locations, and project dimensions are described in the following reports:

Klinner, Duane
(2010) FBIR Goes Everywhere 31x-11 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.
(2010) FBIR Guy Black Hawk 24x-27 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.
(2010) FBIR Grinnell 41x-1 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.
(2010) FBIR Lawrence 24x-26 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.

If your office concurs with this determination, consultation will be completed under the National Historic Preservation Act and its implementing regulations. The Standard Conditions of Compliance will be adhered to.

If you have any questions, please contact Dr. Carson N. Murdy, Regional Archaeologist, at (605) 226-7656.

Sincerely,

ACTING Regional Director

Enclosures

cc: Chairman, Three Affiliated Tribes
Superintendent, Fort Berthold Agency

Appendix F

Agency Correspondence

Grinnell 41X-1, Grinnell 34X-33, and GeorgeBlackHawk 21X-6 Environmental Assessment

XTO Energy, Inc.

Insert Appendix F.

Appendix F

Agency Correspondence

George Blackhawk 31X-6, Grinnell 34X-33 and Grinnell 41X-1 Well Pad and Access Road Environmental Assessment

XTO Energy

PBS&J®
An employee-owned company

June 18, 2010

Kathy Duttenhefner
Planning & Natural Resources Division
North Dakota Parks & Recreation Department
1600 East Century Ave., Suite 3
Bismarck, ND 58503-0649

Dear Ms. Duttenhefner:

We are requesting known location information and any associated data for threatened, endangered, and rare animals and plants within a one-mile distance of our project area boundary (**Project Vicinity Map**). Our project is located on the Fort Berthold Indian Reservation, east of Mandaree, in Dunn County, North Dakota. The project sites occur within:

* Township 149N, Range 92W, Sections 2, 11, 14, 22, 23, 24, 25, 26, 27, 34, & 35;
* Township 149N, Range 91W, Sections 16, 21, 22, 27, 28, 29, 30, 31, 32, & 33;
* Township 148N, Range 92W, Sections 1, 2, 9, & 16;
* Township 148N, Range 91W, Sections 6, 7, 13, & 18.

I understand there is a fee for out-of-state information requests. Please let me know the total cost and we will gladly pay the fee. I can be contacted by phone at (406) 439-0284 or through e-mail at apipp@pbsj.com. Information can be mailed to me at the address on this letterhead or to my e-mail address.

Thank you very much for providing plant and animal information.

Sincerely,

Andrea Pipp

Andrea K. Pipp
Botanist

820 North Montana Avenue • Suite A • Helena, Montana 59601 • Telephone: 406.495.1377 • Fax: 406.495.1379 • www.pbsj.com

John Hoeven, Governor
Mark A. Zimmerman, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

July 14, 2010

Andrea K. Pipp
PBS & J
820 North Montana Avenue, Suite A
Helena, MT 59601

Re: XTO Energy, Inc. Oil Exploration Project

Dear Ms. Pipp:

The North Dakota Parks and Recreation Department (NDPRD) has reviewed the above referenced project proposal to conduct oil exploration in areas located in Sections 2, 11, 14, 22-27, 34, and 35, T149N, R92W; Sections 16, 21, 22, and 27-33, T149N, R91W; Sections 1, 2, 9, 13, and 16, T148N, R92W; and Sections 6, 7, and 18, T148N, R91W, Dunn County.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare species and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any current or historic plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, we do have records for the occurrence of *Charadrius melodus* (piping plover) in a section adjacent to the project area indicating that the habitat in the project area may be suited for this specie or other rare, threatened, sensitive or endangered species. Please see the attached spreadsheet and map for more information on these occurrences. We defer further comments regarding animal species to the North Dakota Game and Fish Department and the United States Fish and Wildlife Service.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

It is our policy to charge out-of-state requests for data services including data retrieval, data analysis, manual and computer searches, packaging and collection of data. An invoice for services provided has been enclosed.

Thank you for the opportunity to comment on this project. Please contact Kathy Duttenhefner (701-328-5370 or kgduttenhefner@nd.gov) of our staff if additional information is needed.

Sincerely,

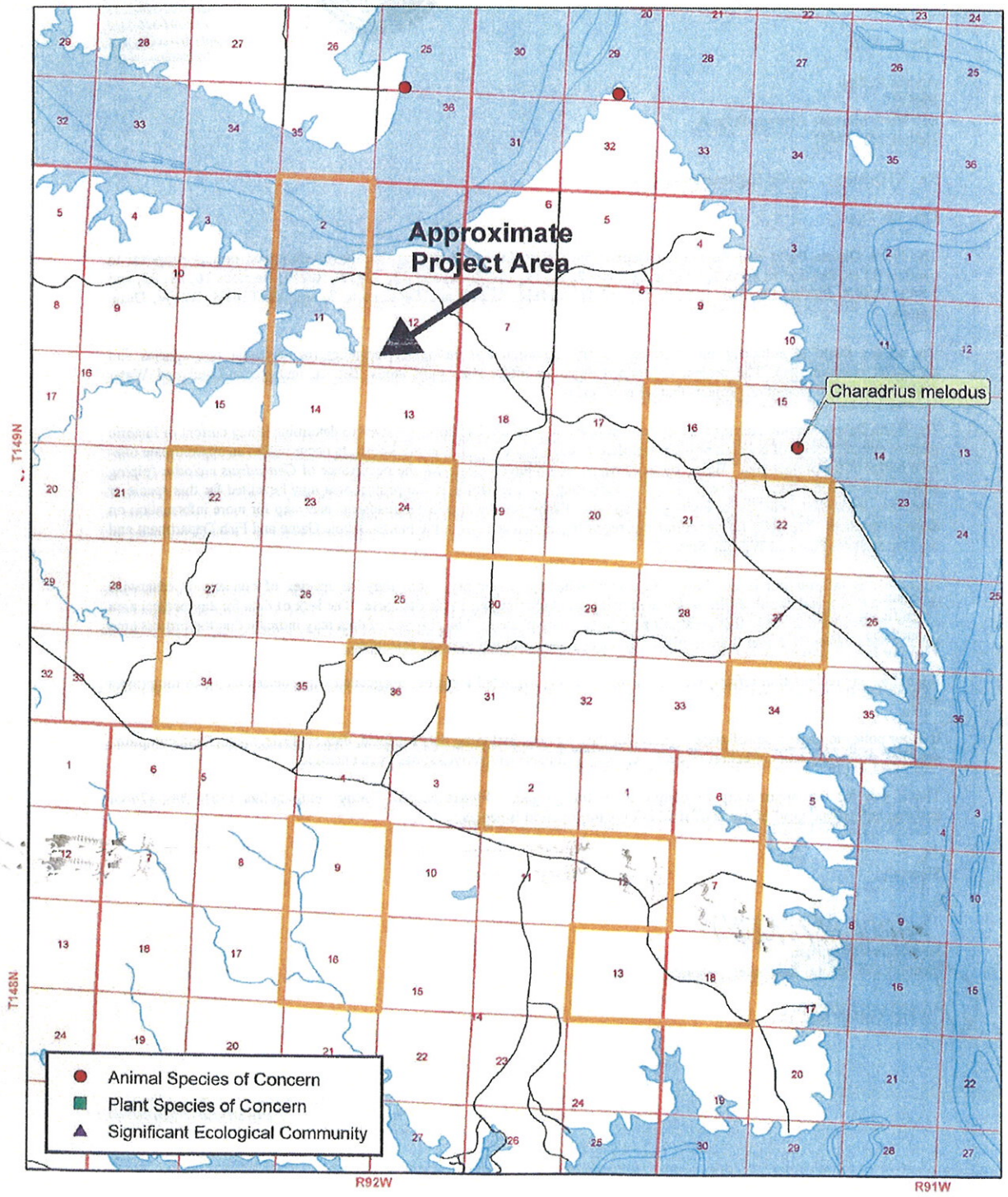
Jesse Hanson

Jesse Hanson, Manager
Planning and Natural Resources Division

R.USNDNHI*2010-194

Play in our backyard!

North Dakota Parks and Recreation Department
North Dakota Natural Heritage Inventory



July 2010

North Dakota Natural Heritage Inventory
Rare Animal and Plant Species and Significant Ecological Communities

State Scientific Name	State Common Name	State Rank	Global Rank	Federal Status	Township Range Section	County	Last Observation	Estimated Representation Accuracy	Precision
Charadrius melodus	Piping Plover	S1S2	G3	LE, LT	149N091W - 15	Dunn	1996		S

North Dakota Natural Heritage Inventory Biological and Conservation Data Disclaimer

The quantity and quality of data collected by the North Dakota Natural Heritage Inventory are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in North Dakota have never been thoroughly surveyed, and new species are still being discovered. For these reasons, the Natural Heritage Inventory cannot provide a definite statement on the presence, absence, or condition of biological elements in any part of North Dakota. Natural Heritage data summarize the existing information known at the time of the request. Our data are continually upgraded and information is continually being added to the database. This data should never be regarded as final statements on the elements or areas that are being considered, nor should they be substituted for on-site surveys.

Estimated Representation Accuracy

Value that indicates the approximate percentage of the Element Occurrence Representation (EO Rep) that was observed to be occupied by the species or community (versus buffer area added for locational uncertainty). Use of estimated representation accuracy provides a common index for the consistent comparison of EO reps, thus helping to ensure that aggregated data are correctly analyzed and interpreted.

Very high (>95%)
High (>80%, <= 95%)
Medium (>20%, <= 80%)
Low (>0%, <= 20%)
Unknown
(null) - Not assessed

Precision

A single-letter code for the precision used to map the Element Occurrence (EO) on a U.S. Geological Survey (USGS) 7.5' (or 15') topographic quadrangle map, based on the previous Heritage methodology in which EOs were located on paper maps using dots.

S - Seconds: accuracy of locality mappable within a three-second radius; 100 meters from the centerpoint
M - Minute: accuracy of locality mappable within a one-minute radius; 2 km from the centerpoint
G - General: accuracy of locality mappalbe to map or place name precision only; 8 km from centerpoint
U - Unmappable

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June 24, 2010

Fred Poitra
Three Affiliated Tribes
Game & Fish Director
404 Frontage Road
New Town, North Dakota 58763

Subject: XTO Energy Oil Exploration on the Fort Berthold Indian Reservation - 2010

Dear Director Poitra:

XTO Energy, Inc. (XTO) is proposing to conduct oil exploration activities at 12 new sites in Dunn County, east of Mandaree, North Dakota on the Fort Berthold Indian Reservation (FBIR) (**Project Vicinity & Well Pad and Access Road Locations maps**). The well sites fall under the jurisdiction of the U.S. Department of Interior's Bureau of Indian Affairs (BIA), necessitating the preparation of an environmental assessment (EA). XTO is preparing a draft EA for each site on behalf of the BIA. We would appreciate information on threatened & endangered plants and animals (i.e., black-footed ferret, Dakota skipper, gray wolf, Interior Least Tern, pallid sturgeon, Piping Plover, and Whooping Crane), concerns related to the proposed activities, known locations of Bald Eagle, Golden Eagle, and other raptor nests, information on big game winter/summer range, and information on general wildlife and plants. In addition please let us know if there are any Tribal revegetation guidelines and any Tribal management plans or agreements between the Tribe and the USFWS that contain conservation measures relevant to listed species and their habitats that we should address in the EAs.

The proposed action includes approvals by the BIA and BLM of the drilling and completion of multiple exploratory oil wells at 12 sites on the FBIR (**Approximate Well Pad & Access Road Location Map**). The general legal descriptions of the well pads and access roads are provided in **Table 1**. These well locations are preliminary and the final locations will be determined in consultation with the BIA and the Tribe. The development of these sites would require mechanical excavation and construction for the well pads and access roads. Well pads will range in size from four to five acres. Access roads vary in length, but will generally be a maximum of 66 feet wide and will be placed to maximize the use of the existing road system to the greatest extent possible.

820 North Montana Avenue • Suite A • Helena, Montana 59601 • Telephone: 406.495.1377 • Fax: 406.495.1379 • www.pbsj.com

Table 1. *2010 proposed XTO Energy oil well sites on the Fort Berthold Indian Reservation.*

Site Name	Township	Range	Section(s)	Unit Size (acre)
FBIR GoesEverywhere 31X-11	149N	92W	11, 14	1280
FBIR Lawrence 24X-26	149N	92W	23, 26	1280
FBIR Guy Blackhawk 24X-27	149N	92W	22, 27	1280
FBIR BlackMedicine 21X-16	149N	91W	16, 21	1280
FBIR YoungBear 31X-9	148N	92W	9, 16	1280
FBIR HuntsAlong 44X-31	149N	91W	31 (eastern half)	320
FBIR Headless Turtle 24X-32	149N	91W	29, 32	1280
FBIR Grinnell 34X-33	149N	91W	28, 33	1280
FBIR Grinnell 41X-1	148N	92W	1, 2	1280
FBIR George BlackHawk 31X-6	148N	91W	6, 7	1280
FBIR Nellie Old Mouse 43X-18	148N	91W	13, 18	1280
FBIR-name to be determined (NameTBD)	149N	91W	22, 27	1280

Our biologists will be conducting field work at these sites beginning July 12, 2010. Prior to our field visit I will contact you to discuss this project. If convenient, you can also contact me by cell phone (406-439-0284) or at the office (406-495-1377.

I have appreciated your assistance in providing biological information on previous proposed oil/gas well sites and look forward to discussing these new site locations with you. Thank you for your time.

Sincerely,

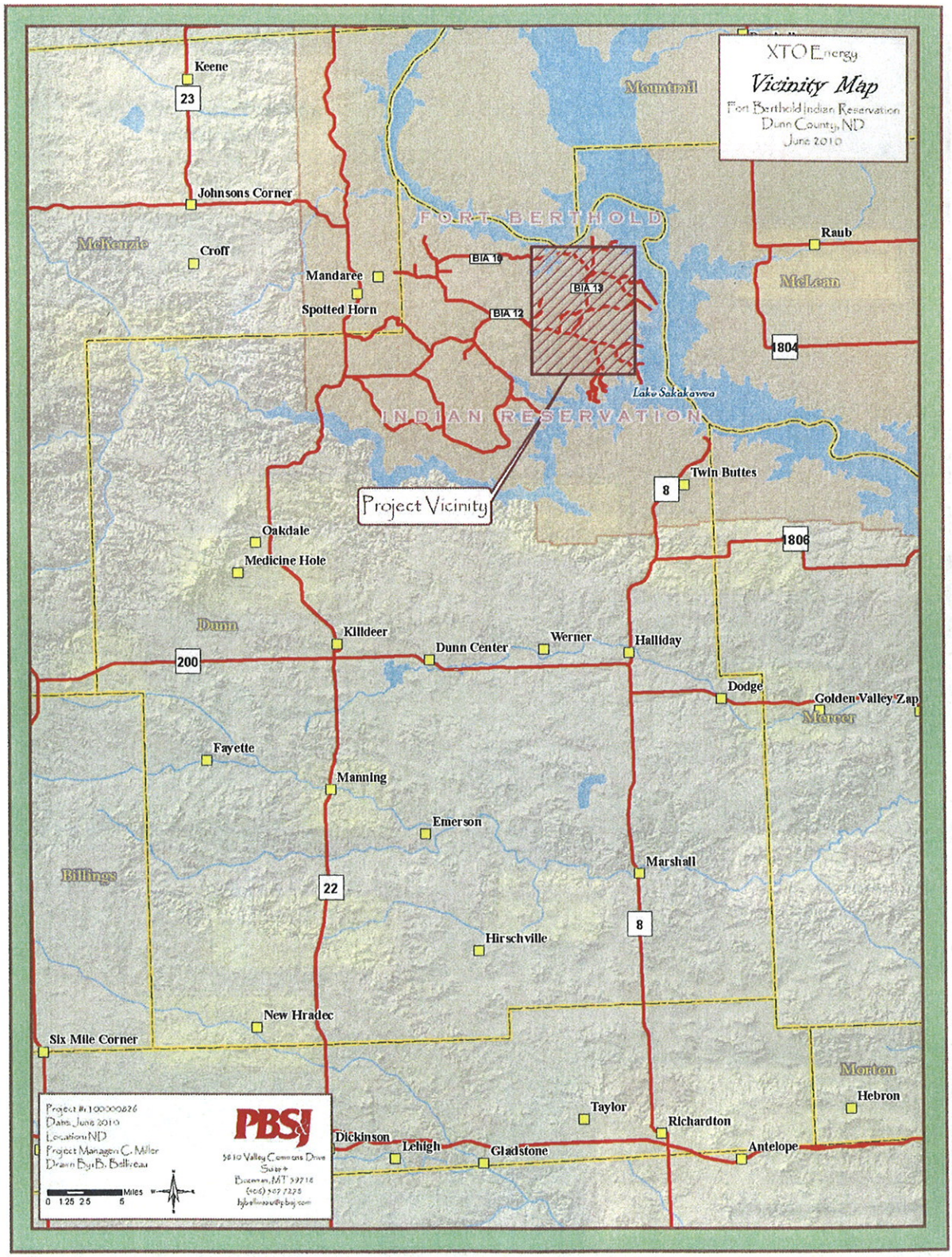
Andrea Pipp

Andrea K. Pipp
Botanist

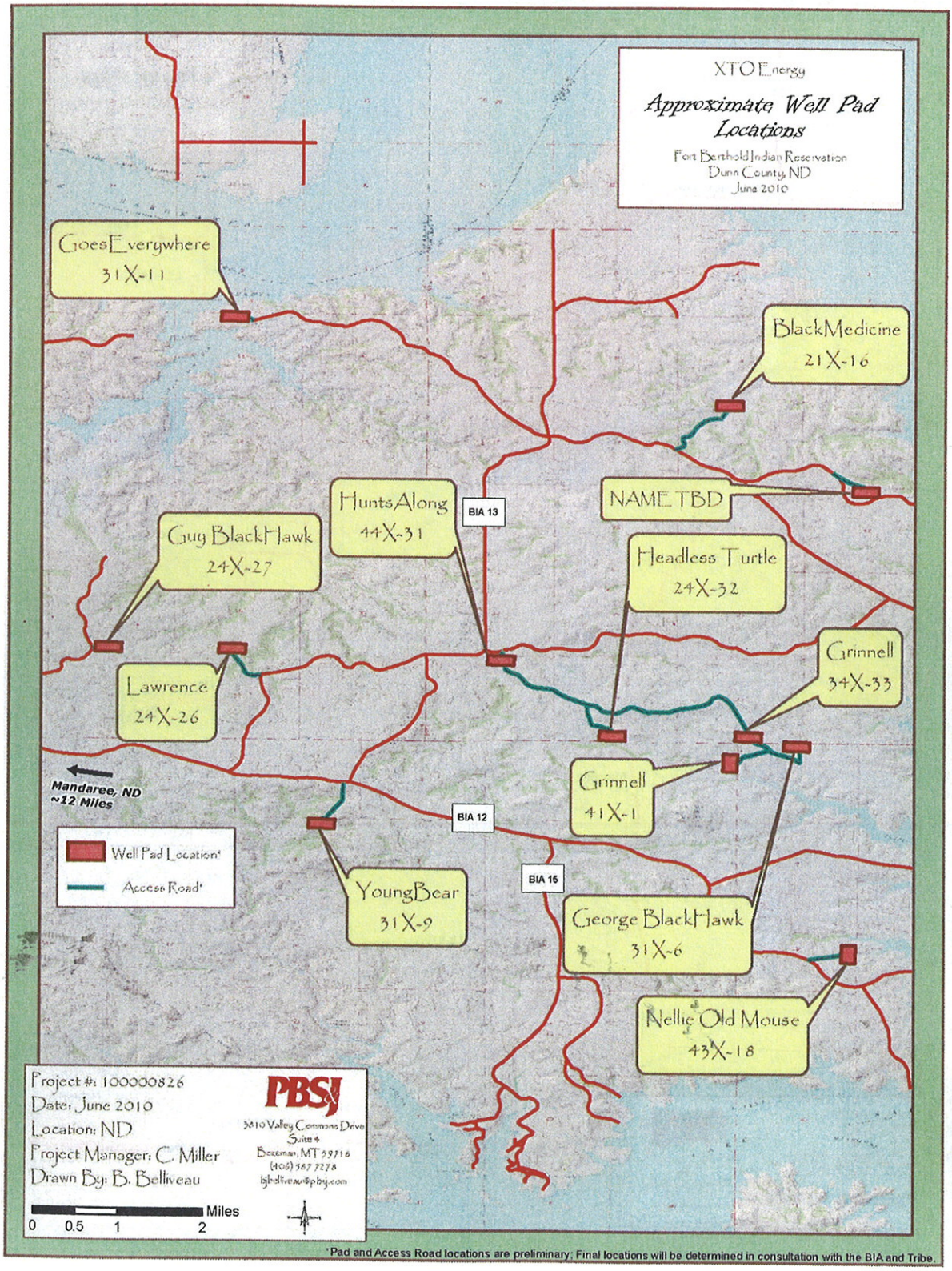
Enclosures

Cc: C. Miller, PBS&J
R. McEldowney, PBS&J
D. Phillippi, NRO
D. Worthington, XTO Energy
M. Bercier, BIA

PBSJ



Insert WSFWS reply letter


XTO Energy
Approximate Well Pad Locations
Fort Berthold Indian Reservation
Dunn County, ND
June 2010
GoesEverywhere 31X-11
BlackMedicine 21X-16
HuntsAlong 44X-31
BIA 13
NAME TBD
Guy BlackHawk 24X-27
Headless Turtle 24X-32
Grinnell 34X-33
Lawrence 24X-26
Grinnell 41X-1
Mandaree, ND ~12 Miles
BIA 12
BIA 15
Well Pad Location*
Access Road*
YoungBear 31X-9
George BlackHawk 31X-6
Nellie Old Mouse 43X-18
Project #: 100000826
Date: June 2010
Location: ND
Project Manager: C. Miller
Drawn By: B. Belliveau
PBSJ
3610 Valley Commons Drive
Suite 4
Bozeman, MT 59718
(406) 587 7278
bjbelliveau@pbsj.com
Miles
0 0.5 1 2
*Pad and Access Road locations are preliminary; Final locations will be determined in consultation with the BIA and Tribe.

PBS&J

An employee-owned company

June 24, 2010

Jeffery Towner
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, North Dakota 58501-7926

Subject: XTO Energy Oil Exploration on the Fort Berthold Indian Reservation - 2010

Dear Mr. Towner:

XTO Energy, Inc. (XTO) is proposing to conduct oil exploration activities at several new sites in Dunn County, east of Mandaree, North Dakota on the Fort Berthold Indian Reservation (FBIR) (**Project Vicinity Map**). The well sites fall under the jurisdiction of the U.S. Department of Interior's Bureau of Indian Affairs (BIA), necessitating the preparation of an environmental assessment (EA). XTO is preparing a draft EA for each site on behalf of the BIA. As outlined under Section 7 of the Endangered Species Act of 1973, as amended, XTO and their consultants, as the designated agent for the BIA for XTO projects, requests that the U.S. Fish and Wildlife Service provide a list of and any ancillary information for known occurrences of proposed, candidate, threatened, and endangered species, as well as, designated critical habitat areas that occur or potentially occur in the project area (**Project Vicinity Map**). We would also appreciate any additional guidance regarding migratory birds, wetlands, other related biological issues that your office regulates or has a specific interest in, and concerns related to proposed activities.

The proposed action includes approvals by the BIA and BLM of the drilling and completion of multiple exploratory oil wells at 12 sites on the FBIR (**Approximate Well Pad & Access Road Location Map**). The general legal descriptions of the well pads and access roads are provided in **Table 1**. These well locations are preliminary and the final locations will be determined in consultation with the BIA and the Tribe. The development of these sites would require mechanical excavation and construction for the well pads and access roads. Well pads will range in size from four to five acres. Access roads vary in length, but will generally be a maximum of 66 feet wide and will be placed to maximize the use of the existing road system to the greatest extent possible.

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Table 1. *2010 proposed XTO Energy oil well sites on the Fort Berthold Indian Reservation.*

Site Name	Township	Range	Section(s)	Unit Size (acre)
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FBIR-name to be determined (NameTBD)	149N	91W	22, 27	1280

Our biologists will be conducting field work at these sites beginning July 12, 2010. If at all possible, we would greatly appreciate a response prior to our field work. I have appreciated your assistance in providing guidance on TE species for previous potential oil/gas well sites and look forward to discussing concerns related to these new site locations. I can be contacted by e-mail at apipp@pbsj.com or by cell phone at (406) 439-0284. Thank you for your time.

Sincerely,

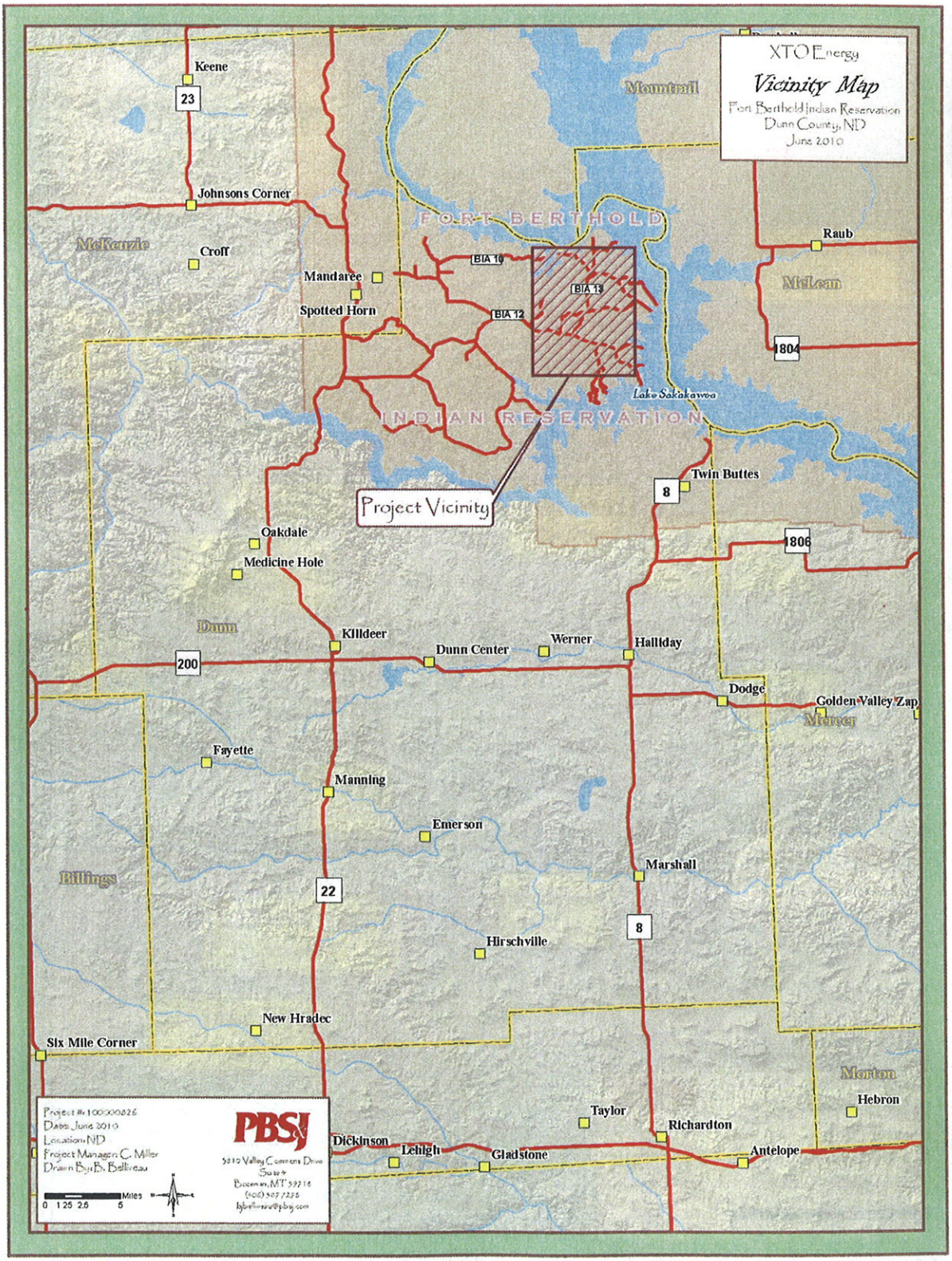
Andrea Pipp

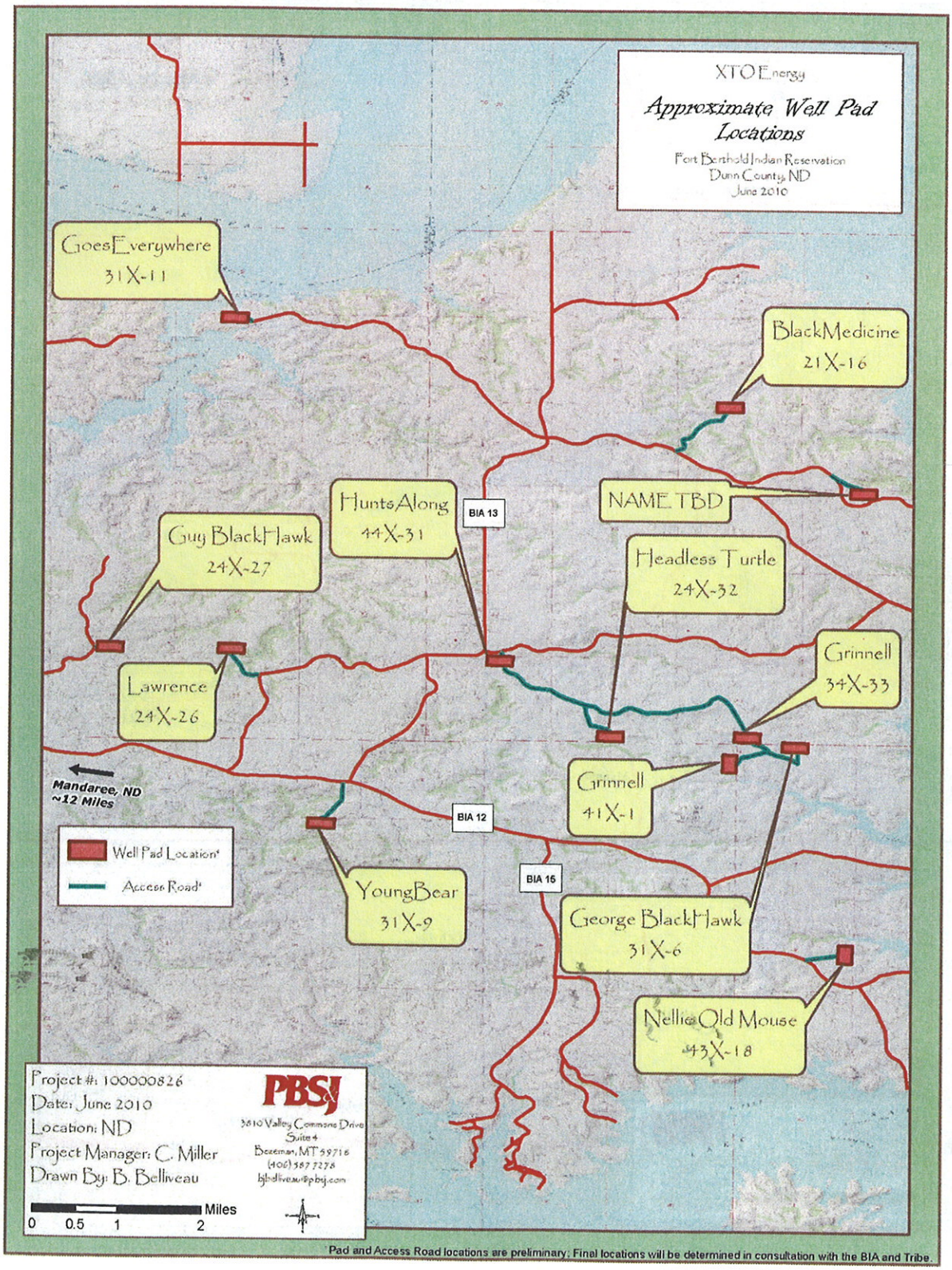
Andrea K. Pipp
Botanist

Enclosures

Cc: C. Miller, PBS&J
R. McEldowney, PBS&J
D. Phillippi, NRO
D. Worthington, XTO Energy
M. Bercier, BIA

PBS&J


XTO Energy
Vicinity Map
Fort Berthold Indian Reservation
Dunn County, ND
June 2010
Keene
23
Johnsons Corner
McKenzie
Croff
Mandaree
Spotted Horn
FORT BERTHOLD
INDIAN RESERVATION
BIA 10
BIA 11
BIA 12
Mountrail
Raub
McLean
1804
Lake Sakakawea
Twin Buttes
8
Project Vicinity
Oakdale
Medicine Hole
1806
Dunn
Killdeer
Dunn Center
Werner
Halliday
200
Dodge
Golden Valley Zap
Mercer
Fayette
Manning
Emerson
Billings
22
Marshall
8
Hirschville
New Hradec
Six Mile Corner
Morton
Hebron
Taylor
Richardton
Dickinson
Lehigh
Gladstone
Antelope
Project #:100000826
Date: June 2010
Location: ND
Project Manager: C. Miller
Drawn By: B. Belliveau
0 1.25 2.5 5 Miles
PBSJ
5810 Valley Commons Drive
Suite 4
Bozeman, MT 59718
(406) 587-7235
bjbelliveau@pbsj.com


XTO Energy
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Fort Berthold Indian Reservation
Dunn County, ND
June 2010
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BlackMedicine 21X-16
HuntsAlong 44X-31
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NAME TBD
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Grinnell 34X-33
Lawrence 24X-26
Mandaree, ND ~12 Miles
Grinnell 41X-1
BIA 12
BIA 15
Well Pad Location*
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YoungBear 31X-9
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3610 Valley Commons Drive
Suite 4
Bozeman, MT 59718
(406) 587 7278
bjbelliveau@pbsj.com
Miles
0 0.5 1 2
*Pad and Access Road locations are preliminary. Final locations will be determined in consultation with the BIA and Tribe.

George Blackhawk 31X-6
Agency Response Letters

United States Department of the Interior

BUREAU OF RECLAMATION
Dakotas Area Office
P.O. Box 1017
Bismarck, North Dakota 58502

TAKE PRIDE IN AMERICA

DK-5000
ENV-6.00

OCT 20 2010

Mr. Chris Miller
Project Manager
PBS&J
115 N 28th Street, Suite 202
Billings, MT 59101-2045

Subject: Solicitation for an Environmental Assessment for the Proposed Construction, Drilling, Completion, and Production of Up to Six Exploratory Oil and Gas Wells on Each of Two Well Pads and Access Roads by XTO Energy on the Fort Berthold Reservation in Dunn County, North Dakota

Dear Mr. Miller:

This letter is written to inform you that we received your letters of October 7 and 13, 2010, and the information and maps have been reviewed by Bureau of Reclamation staff.

The proposed oil well sites located in Dunn County could potentially affect Reclamation facilities in the form of the rural water pipelines of the Fort Berthold Rural Water System since the well access roads, service utilities, and other developments are not specifically identified.

- George Black Hawk 31X-6 Site: NE¼NW¼ of section 6, T148N, R91W Dunn County, ND – well pad and access road
- Grinnell 41X-1 Site: NE¼NE¼ of section 1, T148N, R92W Dunn County, ND – well pad and access road
- Grinnell 41X-1 Site: SE¼SW¼ of section 33, T149N, R91W Dunn County, ND – access road

Note that blue and orange lines represent Reclamation water

We are providing an index map depicting water pipeline alignments in the vicinity of the proposed well site and surrounding area to aid you in identification of potential for adverse effect to or crossings of federal facilities. Also, should you have need to cross a Fort Berthold Rural Water System pipeline, please refer to the enclosed sheet for pipeline crossings specifications and contact our engineer Ryan Waters, as below. Since Reclamation is the lead federal agency for the Fort Berthold Rural Water System, we request that any work planned on the reservation be coordinated with Mr. Lester Crows Heart, Fort Berthold Rural Water Director, Three Affiliated Tribes, 308, 4 Bears Complex, New Town, North Dakota 58763.

Thank you for providing the information and opportunity to comment. If you have any further environmental questions, please contact me at 701-221-1287 or for engineering questions Ryan Waters – General Engineer at 701-221-1262.

Sincerely,

Kelly B. McPhillips
Environmental Specialist

Enclosures – 2

cc: Bureau of Indian Affairs
Great Plains Regional Office
Attention: Ms. Marilyn Bercier
Regional Environmental Scientist
115 Fourth Avenue S.E.
Aberdeen, SD 57401

Mr. Lester Crows Heart
Fort Berthold Rural Water Director
Three Affiliated Tribes
308 4 Bears Complex
New Town, ND 58763
(w/encl)

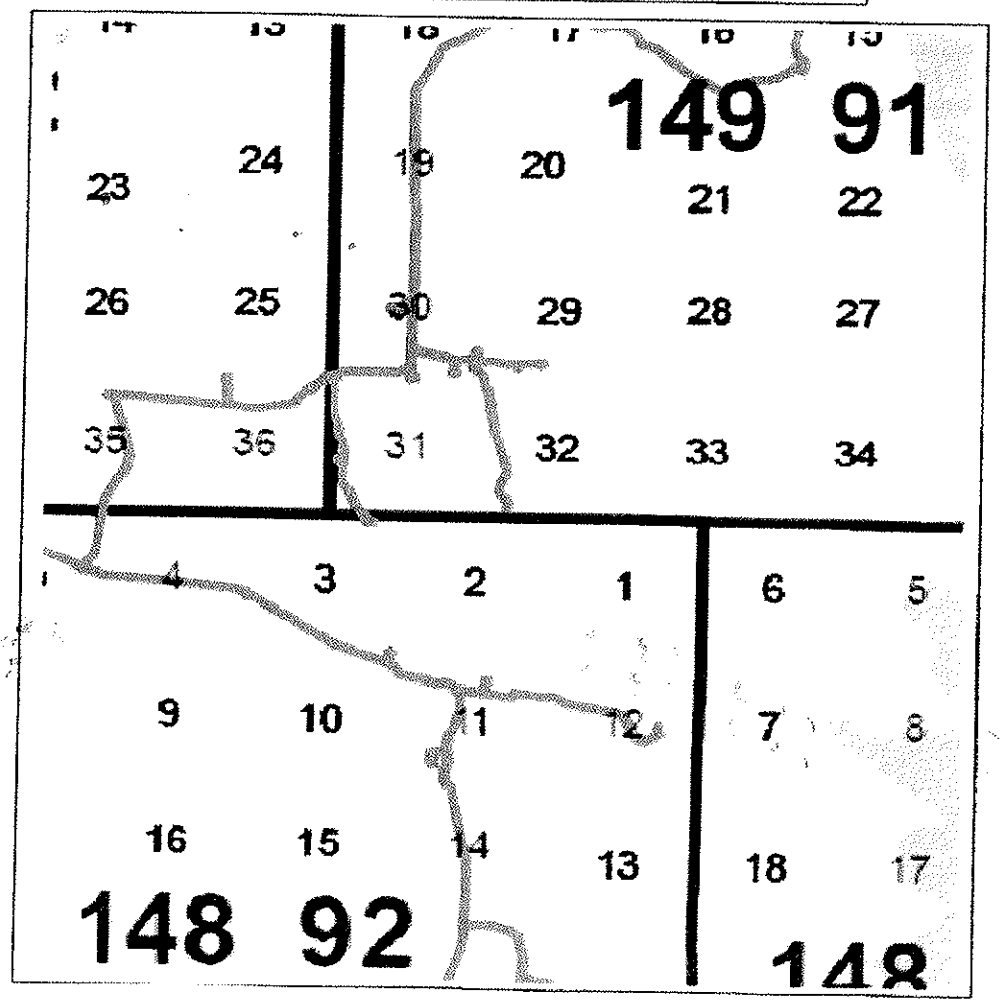
Subject: Solicitation for an Environmental Assessment for the Proposed Construction, Drilling, Completion, and Production of Up to Six Exploratory Oil and Gas Wells on Each of Two Well Pads and Access Roads by XTO Energy on the Fort Berthold Reservation in Dunn County, North Dakota

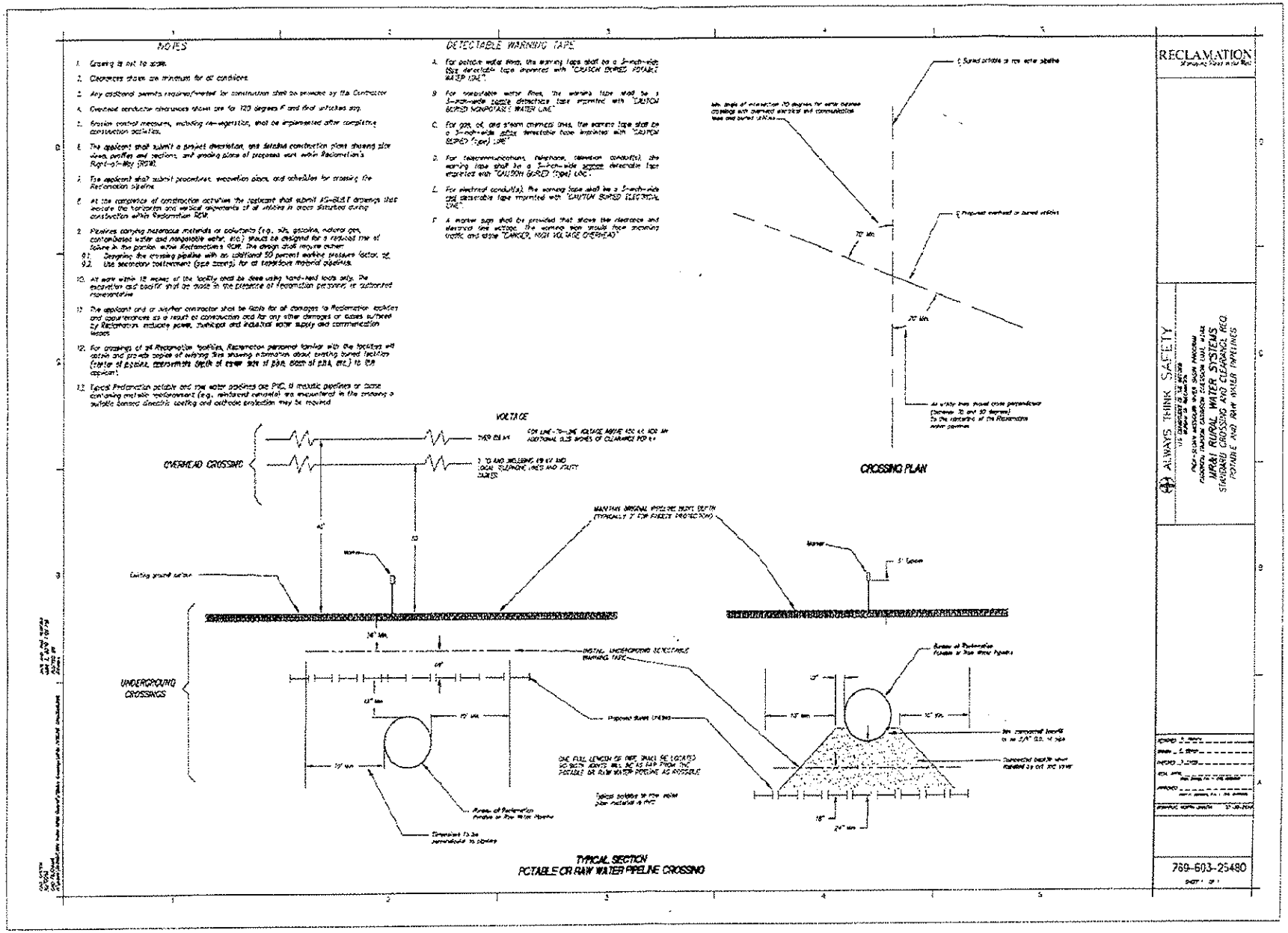
George Black Hawk 31X-6 Site: NE¼ NW¼ of section 6, T148N, R91W Dunn County, ND – well pad and access road

Grinnell 41X-1 Site: NE¼ NE¼ of section 1, T148N, R92W Dunn County, ND – well pad and access road

Grinnell 41X-1 Site: SE¼ SW¼ of section 33, T149N, R91W Dunn County, ND – access road

Note that blue and orange lines represent Reclamation water




NOTES
1. Drawing is not to scale.
2. Clearances shown are minimum for all conditions.
3. Any additional permits required/granted for construction shall be provided by the Contractor.
4. Overhead conductor clearances shown are for 120 degrees F and final unloaded sag.
5. Erosion control measures, including re-vegetation, shall be implemented after completing construction activities.
6. The applicant shall submit a project description, and detailed construction plans showing plan views, profiles and sections, and grading plans of proposed work within Reclamation's Right-of-Way (ROW).
7. The applicant shall submit procedures, excavation plans, and schedules for crossing the Reclamation pipeline.
8. At the completion of construction activities the applicant shall submit AS-BUILT drawings that indicate the horizontal and vertical alignments of all utilities in areas disturbed during construction within Reclamation ROW.
9. Pipelines carrying hazardous materials or substances (e.g., oils, gasoline, natural gas, contaminated water and nonpotable water, etc.) should be designed for a reduced life of future in the portion within Reclamation's ROW. The design shall require either:
9.1. Designing the crossing pipeline with an installed 50 percent working pressure factor, or,
9.2. Use secondary containment (pipe casing) for all hazardous material pipelines.
10. All work within 10 inches of the facility shall be done using hand-held tools only. The excavation and backfill shall be made in the presence of Reclamation personnel or authorized representative.
11. The applicant and or his/her contractor shall be liable for all damages to Reclamation facilities and appurtenances as a result of construction and for any other damages or losses suffered by Reclamation, including power, municipal and industrial water supply and communication losses.
12. For crossing of all Reclamation facilities, Reclamation personnel familiar with the facilities will obtain and provide copies of existing data showing information about existing buried facilities (center of pipeline, approximate depth of cover over all pipe, depth of pipe, etc.) to the applicant.
13. Typical Reclamation potable and raw water pipelines are PVC. If metallic pipelines or those containing metallic reinforcement (e.g., reinforced concrete) are encountered in the crossing a suitable bonded dielectric coating and cathodic protection may be required.
DETECTABLE WARNING TAPE
A. For potable water lines, the warning tape shall be a 3-inch-wide blue detectable tape imprinted with "CAUTION BURIED POTABLE WATER LINE".
B. For nonpotable water lines, the warning tape shall be a 3-inch-wide purple detectable tape imprinted with "CAUTION BURIED NONPOTABLE WATER LINE".
C. For gas, oil, and steam pipelines lines, the warning tape shall be a 3-inch-wide yellow detectable tape imprinted with "CAUTION BURIED (type) LINE".
D. For telecommunications, telephone, television conduit(s), the warning tape shall be a 3-inch-wide orange detectable tape imprinted with "CAUTION BURIED (type) LINE".
E. For electrical conduit(s), the warning tape shall be a 3-inch-wide red detectable tape imprinted with "CAUTION BURIED ELECTRICAL LINE".
F. A marker sign shall be provided that shows the clearance and clearance line ahead. The warning sign should have standard traffic and state "DANGER, HIGH VOLTAGE OVERHEAD"
VOLTAGE
OVERHEAD CROSSING
UNDERGROUND CROSSINGS
CROSSING PLAN
TYPICAL SECTION
POTABLE OR RAW WATER PIPELINE CROSSING
RECLAMATION
ALWAYS THINK SAFETY
MR&I RURAL WATER SYSTEMS
STANDARD CROSSING AND CLEARANCE REQ
POTABLE AND RAW WATER PIPELINES
769-603-25480

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

REPLY TO
ATTENTION OF

October 26, 2010

North Dakota Regulatory Office

PBS&J
Attn: Chris Miller, Project Manager
115 North 28th Street, Suite 202
Billings, Montana 59101-2045

Dear Mr. Miller:

This is in response to your solicitation letter on behalf of **XTO Energy**, received on October 12, 2010 requesting Department of the Army (DA), United States Army Corps of Engineers (Corps) comments for six proposed oil and gas exploratory wells using one a well pad and one access road within the Fort Berthold Indian Reservation: **George Black Hawk 31X-6: Section 6, Township 148 North, Range 91 West, (well pad and access road), Dunn County, North Dakota.**

Corps Regulatory Offices administer Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Section 10 of the Rivers and Harbors Act regulates work in or affecting navigable waters. This would include work over, through, or under Section 10 water. Section 10 waters in North Dakota are the Missouri River (including Lake Sakakawea and Lake Oahe), Yellowstone River, James River south of Jamestown, North Dakota, Bois de Sioux River, Red River of the North, and the Upper Des Lacs Lake. Section 404 of the Clean Water Act regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

For any proposed well where the well line and/or bottom hole is under or crosses under Lake Sakakawea, regardless of depth, we require that project proponent provide a DA permit application (ENG Form 4345) to the Corps.

Enclosed for your information is the fact sheet for Nationwide Permit 12, Utility Line Activities. Pipeline projects are already authorized by Nationwide Permit 12 **provided the utility line can be placed without any change to pre-construction contours and all other proposed construction activities and facilities are in compliance with the Nationwide's permit conditions and 401 Water Quality Certification is obtained.** Please note the pre-construction notification requirements on page 2 of the fact sheet. **If a project involves any one of the seven notification requirements, the project proponent must submit a DA application.** Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 12 and 13 of the fact sheet. [The following info is for activities on a reservation] Please be advised that the United States Environmental Protection Agency (EPA), Region 8 has denied 401 Water Quality Certification for activities in perennial drainages and wetlands. Furthermore, EPA has placed conditions on activities in ephemeral and intermittent drainages. It is recommended you contact the U.S. Environmental Protection Agency, Region 8, Attn: Brent Truskowski, 1595 Wynkoop Street, Denver, Colorado 80202-1129 to review the conditions pursuant to Section 401 of the Clean Water Act prior to any construction.

Printed on Recycled Paper

Also enclosed for your information is the fact sheet for Nationwide Permit 14, Linear Transportation Projects. Road crossings are already authorized by Nationwide Permit 14 **provided the discharge does not cause the loss of greater than ½ acre of waters of the United States per crossing and all other proposed construction activities are in compliance with the Nationwide's permit conditions.** Please note the pre-construction notification requirements on the front page of the fact sheet. **If a project involves (1) the loss of waters of the United States exceeding 1/10 acre per crossing; or (2) there is a discharge in a special aquatic site, including wetlands, the project proponent must submit a DA application prior to the start of construction.** Please reference General Condition 27, Pre Construction Notification on page 8 of the fact sheet. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 11 and 12 of the fact sheet. [The following is included for activities on a reservation] Enclosed is a copy of the United States Environmental Protection Agency, Region 8's; General Conditions for all Nationwide Permits and specific conditions for Nationwide Permit 14.

In the event your project requires approval from the U.S. Army Corps of Engineers and cannot be authorized by Nationwide Permit(s), a Standard or Individual Permit will be required. A project that requires a Standard or Individual Permit is intensely reviewed and will require the issuance of a public notice. A Standard or Individual Permit generally requires a minimum of 120 days for processing but based on the project impacts and comments received through the public notice may extend beyond 120 days.

This correspondence letter is neither authorization for the proposed construction nor confirmation that the proposed project complies with the Nationwide Permit(s).

If any of these projects require a Section 10 and/or Section 404 permit, please complete and submit the enclosed Department of the Army permit application (ENG Form 4345) to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504. If you are unsure if a permit is required, you may submit an application; include a project location map, description of work, and construction methodology.

If we can be of further assistance or should you have any questions regarding our program, please do not hesitate to contact this office by letter of phone at (701) 255-0015.

Sincerely,

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosure
ENG Form 4345
Fact Sheet NWP 12 and 14

CF w/o encl
EPA Denver (Brent Truskowski)

Instructions for Preparing a Department of the Army Permit Application

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name and the E-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, e.g., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the latitude and longitude of where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality that the site is located in.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known.

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wing walls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control)

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes. rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.) If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Description of Avoidance, Minimization, and Compensation. Provide a brief explanation describing how impacts to waters of the United States are being avoided and minimized on the project site. Also provide a brief description of how impacts to waters of the United States will be compensated for, or a brief statement explaining why compensatory mitigation should not be required for those impacts.

Block 24. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identify the authorization, if possible.

Block 25. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 26. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 27. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section) **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.**

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 EXPIRES: 31 August 2012

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers, Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME:	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
First - Middle - Last - Company - E-mail Address -	First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address - City - State - Zip - Country -	9. AGENT'S ADDRESS Address - City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. W/AREA CODE a. Residence b. Business c. Fax	10. AGENT'S PHONE NOs. W/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____
APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
15. LOCATION OF PROJECT Latitude °N Longitude °W	Address City - State - Zip -

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality
Section - Township - Range -

17. DIRECTIONS TO THE SITE

ENG FORM 4345, SEPT 2009 EDITION OF OCT 2004 IS OBSOLETE Proponent: CECW-OR

18 Nature of Activity (Description of project, include all features)

19 Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20 Reason(s) for Discharge

21 Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards

22 Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres

Or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? Yes ☐ No ☐ IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list)

Address –

City State - Zip –

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

ENG FORM 4345, SEPT 2009

FACT SHEET
NATIONWIDE PERMIT 12
(2007)

UTILITY LINE ACTIVITIES. Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2 acre of waters of the United States.

Utility lines: This NWP authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in pre-construction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2 acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for overhead utility line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, provided the total discharge from a single and complete project does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (See 33 CFR Part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or

under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP also authorizes temporary structures, fills, and work necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (Sections 10 and 404)

Note 1: Where the proposed utility line is constructed or installed in navigable waters of the United States (i.e., section 10 waters), copies of the pre-construction notification and NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: Access roads used for both construction and maintenance may be authorized provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, accordance with the requirements for temporary fills.

Note 3: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to Section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

General Conditions: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as appropriate, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer.

1. **Navigation**. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. **Removal of Temporary Fills.** Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. **Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

15. **Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

16. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

17. **Endangered Species.** (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical

habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide Web pages at http://www.fws.gov/ and http://www.noaa.gov/fisheries.html respectively.

18. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

19. **Designated Critical Resource Waters.** Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 27, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

20. **Mitigation.** The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require pre-construction notification, unless the district engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. For wetland losses of 1/10 acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream restoration, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2 acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2 acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address

documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

21. **Water Quality**. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality. *Specifically in North Dakota, the North Dakota Department of Health has denied certification for projects under this Nationwide Permit proposed to cross* ***all classified rivers, tributaries and lakes****; individual certification for project in these waterways must be obtained by the project proponent prior to authorization under this Nationwide Permit. For utility line crossings of all other waters, the Department of Health has issued water quality certification provided the attached Construction and Environmental Disturbance Requirements are followed.*

22. **Coastal Zone Management**. *Not Applicable.*

23. **Regional and Case-By-Case Conditions**. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

24. **Use of Multiple Nationwide Permits**. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

25. **Transfer of Nationwide Permit Verifications**. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:
"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)

(Date)

26. Compliance Certification. Each permittee who received a NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

27. Pre-Construction Notification. *See attached pages.*

28. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project.

General Condition 27. Pre-Construction Notification.

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) Forty five calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 17 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.);

(4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters of the United States, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, where appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10 acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP 48 activities requiring pre-construction notification and for other NWP activities requiring pre-construction notification to the district engineer that result in the loss of greater than 1/2-acre of waters of the United States, the district engineer will immediately provide (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy of the PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps multiple copies of pre-construction notifications to expedite agency coordination.

(5) For NWP 48 activities that require reporting, the district engineer will provide a copy of each report within 10 calendar days of receipt to the appropriate regional office of the NMFS.

(e) District Engineer's Decision: In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If the proposed activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.

2007 NATIONWIDE PERMITS
REGIONAL CONDITIONS
STATE OF NORTH DAKOTA
OMAHA DISTRICT – CORPS OF ENGINEERS

The U.S. Army Corps of Engineers has adopted the following regional conditions for activities authorized by nationwide permits within the State of North Dakota. However, the pre-construction notification requirements defined below are not applicable to Nationwide Permit 47.

1. Wetlands Classified as Fens

All Nationwide Permits, with the exception of 3, 5, 20, 32, 38, 45, and 47, are revoked for use in fens in North Dakota. For nationwide permits 3, 5, 20, 32, 38, and 45 permittees must notify the Corps in accordance with General Condition 27 (Notification) prior to initiating any regulated activity impacting fens in North Dakota.

Fens are wetlands that develop where a relatively constant supply of ground water to the plant rooting zone maintains saturated conditions most of the time. The water chemistry of fens reflects the mineralogy of the surrounding and underlying soils and geological materials. The substrate is carbon-accumulating, ranging from muck to peat to carbonates. These wetlands may be acidic to alkaline, have pH ranging from 3.5 to 8.4 and support a range of vegetation types. Fens may occur on slopes, in depressions, or on flats (i.e., in different hydrogeomorphic classes; after: Brinson 1993).

2. Waters Adjacent to Natural Springs

For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 27 (Notification) for regulated activities located within 100 feet of the water source in natural spring areas in North Dakota. For purposes of this condition, a spring source is defined as any location where there is artesian flow emanating from a distinct point at any time during the growing season. Springs do not include seeps and other groundwater discharge areas where there is no distinct point source.

3. Missouri River, including Lake Sakakawea and Lake Oahe within the State of North Dakota

For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 27 (Notification) prior to initiating any regulated activity in the Missouri River, including Lake Sakakawea and Lake Oahe, within the State of North Dakota.

4. Historic Properties

That the permittee and/or the permittee's contractor, or any of the employees, subcontractors or other persons working in the performance of a contract(s) to complete the work authorized herein, shall cease work and report the discovery of any previously unknown historic or archeological remains to the North Dakota Regulatory Office. Notification shall be by telephone or fax within 24 hours of the discovery and in writing within 48 hours. Work shall not resume until the permittee is notified by the North Dakota Regulatory Office.

5. Spawning Condition

That no regulated activity within waters of the United States listed as Class III or higher on the 1978 Stream Evaluation Map for the State of North Dakota or on the North Dakota Game and Fish Department's website as a North Dakota Public Fishing Water shall occur between 15 April and 1 June. No regulated activity within the Red River of the North shall occur between 15 April and 1 July.

Additional Information

Permittees are reminded that General Condition No. 6 prohibits the use of unsuitable materia . In addition organic debris, some building waste, and materials excessive n fires are not suitable material

Specific verbiage on prohibited materials and the 1978 Stream Evaluation Map for the State of North Dakota can be accessed on the North Dakota Regulatory Office's website at:
https://www.nwo.usace.army.mil/html/od-rod/ndhome.htm

FACT SHEET
NATIONWIDE PERMIT 14
(2007)

LINEAR TRANSPORTATION PROJECTS. Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10 acre; or (2) there is a discharge in a special aquatic site, including wetlands. (Sections 10 and 404)

Note: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

General Conditions: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as appropriate, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. **Aquatic Life Movements**. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

3. **Spawning Areas**. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. **Migratory Bird Breeding Areas**. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. **Shellfish Beds**. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48.

6. **Suitable Material**. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. **Water Supply Intakes**. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. **Adverse Effects From Impoundments**. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. **Management of Water Flows**. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. **Fills Within 100-Year Floodplains**. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. **Equipment**. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. **Soil Erosion and Sediment Controls**. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. **Removal of Temporary Fills.** Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. **Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

15. **Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

16. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

17. **Endangered Species.** (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical

habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide Web pages at http://www.fws.gov/ and http://www.noaa.gov/fisheries.html respectively.

18. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

19. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 27, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

20. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require pre-construction notification, unless the district engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. For wetland losses of 1/10 acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream restoration, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2 acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2 acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address

documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

21. **Water Quality.** Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality. *Specifically for North Dakota, the North Dakota Department of Health has issued water quality certification for projects under this Nationwide Permit provided the attached Construction and Environmental Disturbance Requirements are followed.*

22. **Coastal Zone Management.** *Not Applicable.*

23. **Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

24. **Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

25. **Transfer of Nationwide Permit Verifications.** If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

(Date)

26. Compliance Certification. Each permittee who received a NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

27. Pre-Construction Notification. *See attached pages.*

28. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project

General Condition 27. Pre-Construction Notification.

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) Forty five calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 17 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision).

(4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters of the United States, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, where appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10 acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP 48 activities requiring pre-construction notification and for other NWP activities requiring pre-construction notification to the district engineer that result in the loss of greater than 1/2-acre of waters of the United States, the district engineer will immediately provide (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy of the PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps multiple copies of pre-construction notifications to expedite agency coordination.

(5) For NWP 48 activities that require reporting, the district engineer will provide a copy of each report within 10 calendar days of receipt to the appropriate regional office of the NMFS.

(e) District Engineer's Decision: In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If the proposed activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.

2007 NATIONWIDE PERMITS
REGIONAL CONDITIONS
STATE OF NORTH DAKOTA
OMAHA DISTRICT – CORPS OF ENGINEERS

The U.S. Army Corps of Engineers has adopted the following regional conditions for activities authorized by nationwide permits within the State of North Dakota. However, the pre-construction notification requirements defined below are not applicable to Nationwide Permit 47.

1. Wetlands Classified as Fens

All Nationwide Permits, with the exception of 3, 5, 20, 32, 38, 45, and 47, are revoked for use in fens in North Dakota. For nationwide permits 3, 5, 20, 32, 38, and 45 permittees must notify the Corps in accordance with General Condition 27 (Notification) prior to initiating any regulated activity impacting fens in North Dakota.

Fens are wetlands that develop where a relatively constant supply of ground water to the plant rooting zone maintains saturated conditions most of the time. The water chemistry of fens reflects the mineralogy of the surrounding and underlying soils and geological materials. The substrate is carbon-accumulating, ranging from muck to peat to carbonates. These wetlands may be acidic to alkaline, have pH ranging from 3.5 to 8.4 and support a range of vegetation types. Fens may occur on slopes, in depressions, or on flats (i.e., in different hydrogeomorphic classes; after Brinson 1993)

2. Waters Adjacent to Natural Springs

For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 27 (Notification) for regulated activities located within 100 feet of the water source in natural spring areas in North Dakota. For purposes of this condition, a spring source is defined as any location where there is artesian flow emanating from a distinct point at any time during the growing season. Springs do not include seeps and other groundwater discharge areas where there is no distinct point source.

3. Missouri River, including Lake Sakakawea and Lake Oahe within the State of North Dakota

For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 27 (Notification) prior to initiating any regulated activity in the Missouri River, including Lake Sakakawea and Lake Oahe, within the State of North Dakota.

4. Historic Properties

That the permittee and/or the permittee's contractor, or any of the employees, subcontractors or other persons working in the performance of a contract(s) to complete the work authorized herein, shall cease work and report the discovery of any previously unknown historic or archeological remains to the North Dakota Regulatory Office. Notification shall be by telephone or fax within 24 hours of the discovery and in writing within 48 hours. Work shall not resume until the permittee is notified by the North Dakota Regulatory Office.

5. Spawning Condition

That no regulated activity within waters of the United States listed as Class III or higher on the 1978 Stream Evaluation Map for the State of North Dakota or on the North Dakota Game and Fish Department's website as a North Dakota Public Fishing Water shall occur between 15 April and 1 June. No regulated activity within the Red River of the North shall occur between 15 April and 1 July.

Additional Information

Permittees are reminded that General Condition No. 6 prohibits the use of unsuitable material. In addition, organic debris, some building waste, and materials excessive in fines are not suitable material.

Specific verbiage on prohibited materials and the 1978 Stream Evaluation Map for the State of North Dakota can be accessed on the North Dakota Regulatory Office's website at: https://www.nwo.usace.army.mil/html/od-rnd/ndhome.htm

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

Environmental Health Section Chief's Office 701.328.5150
Division of Air Quality 701.328.5188
Division of Municipal Facilities 701.328.5211
Division of Waste Management 701.328.5166
Division of Water Quality 701.328.5210

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Environmental Protection Agency, Region 8

Water Quality Certification in Accordance with Section 401 of the Clean Water Act for the 2007 Nationwide Permits in Indian Country

May 11, 2007

These requirements apply to permitted activities occurring within "Indian country" as defined at 18 U.S.C. Section 1151, which includes lands located within formal Indian reservations as well as lands held in trust by the United States for Indian tribes and located outside the boundaries of formal Indian reservations. Please be aware that tribal trust lands located outside the boundaries of formal Indian reservations exist in Region 8.

A. SPECIFIC NATIONWIDE PERMITS CWA Section 401 CERTIFICATION DENIED

USEPA Region 8 is denying CWA Section 401 certification on all waters for the following NWPs: # 16, # 17, # 21, # 33, # 34, # 44, # 45, # 46, # 47, # 49 and # 50. On NWPs that have been "denied" the EPA will review the proposed permit activity and issue a project-specific 401 Certification decision on each permit.

B. GENERAL CONDITIONS FOR ALL NATIONWIDE PERMITS

1. Project proponent/contractor must have the following on-site:
   - a copy of the appropriate USEPA Regional 401 certification general and specific conditions contained in this certification;

   in addition, for NWP permits requiring a 401 certification application to USEPA:
   - the 401 certification application, and
   - EPA Region 8 CWA Section 401 certification document if applicable.

2. Certification is denied for any activity affecting fens and springs.
   Note: EPA adopts the definitions of these aquatic resources as defined by the 2007 Regional Conditions, as defined by the published draft conditions.

3. This certification does not authorize the placement or construction of septic/leach systems or other sewage/waste treatment plants in wetlands.

4. This certification does not authorize the construction of dams, except for stream restoration projects.

5. This certification does not authorize the construction of any portion of a facility for confined animal feeding operations, including, but not limited to, the construction of buildings, holding/detention and sewage lagoons, and/or livestock holding areas.

6. Wetland mitigation under these nationwide permits shall be completed prior to, or concurrent with, the project impacts. Wetland mitigation should be in-kind and on-site replacing native wetland plant communities lost from all project impacts. If the USACE

recommends a mitigation bank or in-lieu fee program and the permittee chooses to utilize the option of a mitigation bank or in-lieu fee program, the applicant must submit the name of the bank or program, and the number and type of credits to be purchased prior to project impacts.

7. For any general or specific nationwide permit conditions requiring notification in accordance with the Preconstruction Notification general condition #27 (72 Fed. Reg. 11092, 11195 (March 12, 2007)), "Agency Coordination" for project activities should include coordination with Native American Tribe or Tribes affected by such project activities.

8. Based on experience with invasive species, infestations of invasive plant species may result in increased erosion and/or pesticide applications, have the potential to reduce water quality, impact aquatic habitat, and impact designated water quality uses. This certification requires the use of certified weed-free hay/straw with any revegetation of project areas for activities authorized under these nationwide permits. This certification requires the use of seed that contain no noxious weed seed and meets certified seed quality. All seed must have a valid seed test within one year of the use date, from a seed analysis lab by a registered seed analyst (Association of Official Seed Analysts). The seed lab results shall show no more than 0.5 percent by weight of other weed seeds; and the seed lot shall contain no noxious, prohibited, or restricted weed seeds according to State seed laws in the respective State(s).

9. This certification requires monitoring for and control of invasive species during project construction if areas are disturbed and not immediately revegetated. This certificate requires monitoring for and immediate control of invasive species after project completion through at least one growing season. A maximum goal of less than 5% weed-species plants should be set, unless local, State, Tribal, or USACE rules, ordinances or permit conditions require more stringent monitoring and response.

10. Vegetation should be protected except where its removal is absolutely necessary for completion of the work. Applicant should revegetate disturbed soil in a manner that optimizes plant establishment for that specific site. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching as necessary. Applicant should use native material where appropriate and feasible. Where practical, stockpile weed-seed-free topsoil and replace it on disturbed areas. All cut and fill slopes that will not be protected with riprap should be revegetated with appropriate species to prevent erosion.

11. The following conditions apply when operating equipment or otherwise undertaking construction in a water of the U.S.

A. This certification requires all equipment to be inspected for oil, gas, diesel, anti-freeze, hydraulic fluid and other petroleum leaks. All such leaks will be properly repaired and equipment cleaned prior to being allowed on the project.

Leaks that occur after the equipment is moved to the project site will be fixed that same day or the next day or removed from the project area. The equipment is not allowed to continue operating once the leak is discovered.

B. Construction equipment should not be operated below the existing water surface except as follows:

a) Fording at one location is acceptable; however, vehicles should not push or pull material along bed or bank below the existing water level. Impacts from fording should be minimized.

b) Work below the waterline which is essential should be done in a manner to minimize impacts to the aquatic system and water quality.

C. All equipment that has been operated in waters of the US, with known invasive species infestation(s) is to be inspected and cleaned before entering waters of the U.S. for this permit. All equipment is to be inspected and cleaned after use.

12. Any temporary crossings, bridge supports, cofferdams or other structures that are necessary during the permit activity should be designed to handle high flows that can be anticipated during permit activity. All temporary structures should be completely removed from the waterbody at the conclusion of the permitted activity and the area restored to a natural appearance.

13. This certification does not authorize any unconfined discharge of liquid cement in waters of the United States. Grouting riprap must occur under dry conditions with no exposure of wet concrete to the waterbody.

14. All discharges must occur during the low flow or no flow period of the season.

C. ADDITIONAL CONDITIONS FOR SPECIFIC NATIONWIDE PERMITS

In addition to the general conditions for all Nationwide Permits, the following conditions are specific to each listed nationwide permit.

Nationwide Permit 3. Maintenance Activities

A. For the repair of low water crossings, this certification is denied for discharges of any fill or dredged material that would result in an increase in land contour height beyond the original dimensions.

B. Silt and sediment removal associated with low water crossings shall be limited to a maximum of 50 linear feet.

C. Silt and sediment removal associated with bridge crossings shall be limited to a maximum of 100 linear feet.

Nationwide Permit 4. Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities

This certification does not allow for the introduction of non-native flora or fauna.

Nationwide Permit 7. Outfall Structures and Associated Intake Structures

For construction and maintenance activities:

A. Construction of the outfall structure shall be placed at the streambed elevation and, at a minimum; the pipeline should be oversized to prevent high-pressure discharge of stormwater.

B. Certification is denied for construction of the outfall structure in wetlands.

C. Controls shall be put in place to stabilize all areas of the bed and bank around and adjacent to the outfall structure and associated intake structures that may be affected by outfall or stream flows, respectively.

D. This certification does not authorize structures for drainage activities that result in a loss of waters of the U.S., such as tile systems.

Nationwide Permit 11. Temporary Recreational Structures

This certification does not allow for the introduction of non-native flora or fauna.

Nationwide Permit 12. Utility Line Activities

A. Project proponent/contractor must have a copy of the 401 certification application and the EPA 2007 water-quality-certification-document on-site.

B. Certification is denied for activities in perennial drainages and wetlands.

C. Certification is denied for all water intake structures.

D. Activities in ephemeral and intermittent drainages are certified with the following conditions:

a) Crossings must be placed as close to perpendicular to the watercourse as possible.

b) Affected streambanks must be sloped such that the stream bottom width is not reduced and bottom elevations are restored to original elevations.

c) Disturbed stream banks must be reconfigured to mimic a stable naturally vegetated portion of the same stream within ½ mile in either direction of the project and not reduce the bottom width of the stream. If a natural/native stream reach is not available within the adjacent reach, other natural portions of the drainage can serve as a reference condition.

E. USACE General Condition 20. Mitigation, (72 Fed. Reg. 11092, 11193-11194 (March 12, 2007)) requires permittees to avoid and minimize adverse effects to the maximum extent practicable on the project site. A statement or other evidence that General Condition 20 has been met should be submitted.

F. Applications for this NWP water quality 401 certification must include the following detailed information at a minimum and will serve as baseline certification conditions for the project.

a) Location and Wetland Map:
- Narrative describing both the location (i.e., Section, Township Range, and decimal Latitude/Longitude) of the proposed construction project, the affected waters/wetlands, and the type of utility line.
- An aerial photograph with wetland overlays must be provided with Ordinary High Water Mark delineated.

b) Waters of the U.S. Description:
- A description of the waterbody/wetlands including the dominant plant communities present in the wetlands or riparian areas.
- On-site photographs of the site must be taken during the growing season to include a colored overlay line indicating the alignment of the pipeline across the waterbody/wetlands or other construction features.

c) Construction Description:
- A description of the methods by which the utility will be constructed on the site including (but not limited to) the trench size and depth, backfill materials (specifications), construction machinery to be used, cofferdam or road crossing specifications, and best

management practices to be implemented on-site (including invasives controls).
- Access roads must be constructed outside of waters /wetlands where alternatives are available.
- Proposed under drains (tile, french drains, etc.) must be described if proposed with the project.
- Details on pipeline corrosion protection methods must be provided.
- Where a positive gradient exits the wetlands such that drainage along the pipeline may occur, clay blocks, or another suitable method that will protect aquatic resources from inadvertent drainage, are required to prevent said wetland drainage.
- Site-specific cross-sectional drawings should be provided, including a drawing of the clay block or other method used to stop drainage.

d) Description of Impacts to Waters of the U.S.:
- A description of the amount (acreage and square feet) of disturbance/loss to waters of the U.S. (including wetlands) must be provided. Loss of waters includes both temporary and permanent impacts to wetlands resources from the construction project, including access roads.
- The length and width of the crossing and amount of impacts to the dominant plant communities must be provided.
- All unavoidable temporary sidecasting of materials (dredge or fill material) in wetlands must be placed on landscaping fabric or a weed-free hay/straw layer to mark the existing wetlands elevation.

e) Mitigation and Restoration Plan:
- Where proposed construction of the utility results in the conversion of a wetland type (i.e., forested/shrub willow type) to an herbaceous wetland type (i.e., wet meadow type), mitigation of the shrub community must be accomplished on-site to restore designated uses.
- The top six to 12 inches must be backfilled with topsoil from the trench.
- Mitigation plans (including road design specifications to minimize adverse impacts to adjacent wetlands) for unavoidable impacts resulting from access roads must be provided.

Nationwide Permit 13. Bank Stabilization

A. For this certification to be valid, the use of root wads, tree trunks, planting of live vegetation, proper bank sloping or a combination thereof will be used as bank stabilization structures. Native plants shall be planted in all disturbed areas and artificial soil stabilizing material (e.g. mulch, matting, netting etc) shall be used to reduce soil erosion. These materials, to include all plants and plant seed

shall be on site or scheduled for delivery prior to or upon completion of the earth moving activities. Sediment control measures shall be maintained in good working order at all times.

For the purpose of this condition, "proper sloping" is defined as configuring the disturbed bank to mimic a stable portion of the same stream within ½ mile in either direction of the project and not reduce the bottom width of the stream.

B. If flow conditions dictate the use of hardened structures, only appropriately sized angular rock may be used. The use of soil cement, concrete, grouted riprap, etc. is NOT certified.

Nationwide Permit 14. Linear Transportation Projects

A. Stormwater resulting from both the construction and operation of these authorized projects (including runoff from bridge decks) must be routed into constructed runoff water quality control systems (e.g. sediment basins, wet ponds, etc.) in order to eliminate sediment and other pollutants prior to entry of stormwater into waters of the United States.

B. Affected streambanks must be sloped such that the steam bottom width is not reduced and bottom elevations are restored to original elevations.

C. Crossings must be placed as close to perpendicular to the watercourse as possible.

D. The upland and riparian areas adjacent to all sides of the crossing must be revegetated in all directions from the banks of the tributary with native vegetation that is common to the geographical area. Native plants shall be planted in all disturbed areas and artificial soil stabilizing material (e.g. mulch, matting, netting etc) shall be used to reduce soil erosion. These materials, to include all plants and plant seed shall be on site or scheduled for delivery prior to or upon completion of the earth moving activities.

Nationwide Permit 15. U.S. Coast Guard Approved Bridges

A. Stormwater resulting from both the construction and operation of these authorized projects (including runoff from bridge decks) must be routed into constructed runoff water quality control systems (e.g. sediment basins, wet ponds, etc.) in order to eliminate sediment and other pollutants prior to entry of stormwater into waters of the United States.

B. Affected streambanks must be sloped such that the steam bottom width is not reduced and bottom elevations are restored to original elevations.

C. Crossings must be placed as close to perpendicular to the watercourse as possible.

D. The upland and riparian areas adjacent to all sides of the crossing must be revegetated in all directions from the banks of the tributary with native vegetation that is common to the geographical area. Native plants shall be planted in all disturbed areas and artificial soil stabilizing material (e.g. mulch, matting, netting etc) shall be used to reduce soil erosion. These materials, to include all plants and plant seed shall be on site or scheduled for delivery prior to or upon completion of the earth moving activities.

E. Bridge decks should be designed such that they do not drain directly into the waterbody.

Nationwide Permit 16. Return Water From Upland Contained Disposal Areas.
Certification is denied.

Nationwide Permit 17. Hydropower Projects.
Certification is denied.

Nationwide Permit 19. Minor Dredging

A. Dredge or fill may **not** be placed on temporary islet, islands, sandbars, landmass or other area of sediment accumulation, within the banks of a stream, shore of lake, edge of wetland or other type of waterbody; unless the vegetation and geomorphology signify a long term stable configuration. (e.g. Areas of accumulation are not formed from temporary situations such as drought conditions or temporary upstream reservoir release conditions).

B. Dredge materials must be placed in an upland and controlled such that it cannot return to waters of the U.S.

Nationwide Permit 21. Surface Coal Mining Operations. Nationwide Permit 21. Surface Coal Mining Activities
Certification is denied.

Nationwide Permit 23. Approved Categorical Exclusions
This certification is valid only for Categorical Exclusions listed in RGL 05-07.

Nationwide Permit 27. Aquatic Habitat Restoration, Establishment, and Enhancement Activities

A. This certification does not allow conversion of one habitat type to another (e.g. wetlands to open water, woody vegetation to herbaceous).

B. This certification does not allow for the introduction of non-native flora or fauna.

Nationwide Permit 28. Modifications of Existing Marinas

This certification does not allow for expansion.

Nationwide Permit 29. Residential Developments

A. Certification is denied for discharges into wetlands, intermittent or perennial drainages.

B. Subdivisions not authorized under this certification.

C. USACE General Condition 20. Mitigation (72 Fed. Reg. 11092, 11193-11194 (March 12, 2007)) requires permittees to avoid and minimize adverse effects to the maximum extent practicable on the project site. Statement or other evidence that General Condition 20 has been met should be submitted.

Nationwide Permit 30. Moist Soil Management for Wildlife

This certification does not allow for the introduction of non-native flora or fauna.

Nationwide Permit 33. Temporary Construction, Access and Dewatering

Certification is denied.

Nationwide Permit 34. Cranberry Production Activities

Certification is denied.

Nationwide Permit 37. Emergency Watershed Protection and Rehabilitation

A. In addition to the information specified in USACE General Condition 27 Preconstruction Notification (72 Fed. Reg. 11092, 11188 (March 12, 2007)), the notification to USEPA must include documentation that the work qualifies as an "emergency" situation and that immediate action will be taken if nationwide authorization is verified. In addition, notification must include:

a) A delineation of special aquatic sites;

b) Any spoil must be placed in an upland and controlled such that it cannot return to waters of the U.S.; and

c) A delineation of riparian areas to be cleared and an analysis of alternatives to such clearing.

B. Certification is denied for discharges for which notification is submitted more than one year after the official conclusion of the emergency that caused the situation.

C. Certification is denied for channelization of streams or sloughs or for removal of silt beyond what was deposited by the emergency.

Channelization is defined, for this purpose, as the placement of excess material in a manner that modifies the bank alignment, and subsequently the channel alignment, from its present condition.

D. Certification is denied for a discharge of fill or dredged material into special aquatic sites if a practicable alternative that does not involve discharge into a special aquatic site is available. If discharge into a special aquatic site is unavoidable, discharge must be minimized.

E. The disturbing or clearing of riparian areas shall be minimized to enough space to provide equipment access.

F. Construction of temporary structures or drains for the purpose of reducing or preventing flood damage is certified if the site is returned to pre-flood condition within 60 days following the emergency.

G. Repair of permanent structures damaged by floodwaters is certified to the extent that it returns the structure to pre-flood condition.

Nationwide Permit 38. Cleanup of Hazardous and Toxic Waste

For this certification to be valid, notification to USEPA and the Tribe is required.

Nationwide Permit 39. Commercial and Institutional Developments

A. Certification is denied for discharges into wetlands, intermittent or perennial drainages.

B. Certification is denied for subdivisions

C. USACE General Condition 20. Mitigation, (72 Fed. Reg. 11092, 11193-11194 (March 12, 2007)) requires permittees to avoid and minimize adverse effects to the maximum extent practicable on the project site. Statement or other evidence that general condition 20 has been met should be submitted.

Nationwide Permit 40. Agricultural Activities

A. Certification is denied for the construction of new levees, ditches, or drainage activities.

B. Certification is denied for the construction of building pads causing the loss of greater than 1/10 acre of wetlands for both USDA program participants and non-participants.

C. Certification is denied for activities related to tile construction.

Nationwide Permit 41. Reshaping Existing Drainage Ditches

A. Clearing of riparian corridors must be limited to the minimum necessary for project construction. Clearing limits must be specified in the construction contract.

B. This certification does not authorize stream relocation projects.

Nationwide Permit 42. Recreation Facilities

A. Certification is denied for the construction of parking lots, golf course, golf course buildings, ponds and reservoirs, ski areas and ski infrastructures, race tracks, and amusement parks.

B. Certification is denied for discharges resulting in the loss of more than 100 linear feet of channel, streambank, and/or wetlands for a single and complete project.

C. Clearing of riparian corridors and wooded and scrub shrub areas must be limited to the minimum necessary for project construction. Clearing limits must be specified in the construction contract on a drawing and/or map, and in narrative format.

Nationwide Permit 43. Stormwater Management Facilities

Certification is denied for the construction of new stormwater management facilities.

Nationwide Permit 44. Mining Activities. Nationwide Permit 44. Mining Activities

Certification is denied.

Nationwide Permit 45. Repair of Uplands Damaged by Discrete Events.

Certification is denied.

Nationwide Permit 46. Discharges in Ditches

Certification is denied.

Nationwide Permit 47. Pipeline Safety Program Designated Time Sensitive inspections and Repairs

A. Certification is denied, unless there is imminent danger to human health or the health of the environment.

B. Notification and restoration should begin immediately after inspections and repairs are completed. After the fact, notification should be done as soon as possible and include documentation that the work done qualifies as an "emergency" situation and that immediate action was necessary.

Nationwide Permit 49. Coal Remining Activities.
Certification is denied.

Nationwide Permit 50. Underground Coal Mining Activities
Certification is denied.

APPLICATION CHECKLIST FOR COMPLETENESS
401 CERTIFICATIONS for USACE NWPs

1. Application date.
2. Applicant's full identity whether individual or corporate.
3. Applicant's full mailing address or addresses.
4. Signature of the legal applicant is required.
5. Telephone number and e-mail address (and FAX, if available) at which the applicant may be reached during normal business hours.
6. If the applicant is utilizing the services of a legal agent to apply for certification, items 2, 3, 4 and 5 will be also needed for this agent.
7. Full names and addresses of all property owners of the project.
8. Full names and addresses of all adjoining property owners to the project.
9. Overall project description and range of project. (This includes all phases of work.)
10. Purpose of the project (flood control, drainage improvement, erosion control, road construction, etc.).
11. Project dimensions (length, width, height) expressed in standard, commonly-used, units of measurement.
12. Site maps and engineering drawings for more complex projects are recommended, sketches may suffice for smaller or less complex projects. Maps or aerial photographs should be clear and readable. Aerial photographs should be marked with wetlands, waterbodies or high water mark and areas of activity marked.
13. Legal description of the project location (appropriate breakdown into Section(s), Township, Range and County sufficient to locate and define on topographic maps). The notification should also include locational information in decimal degree latitude and longitude.
14. General travel directions to the site.
15. Name or identity of the water body(s) that the project is expected to impact. If the stream is not permanent flow, the applicant will need to include an evaluation by the Corps of Engineers that the water body is jurisdictional.
16. Specifically, state which NWP(s) the applicant is applying for from the USACE. Include measures of impact to waterbody (for example: acreage for surface water impacts, linear feet of bank, shoreline linear feet and acreage) for each NWP.
17. A statement of the cubic yards of material or fill proposed to be placed below the ordinary high water mark within the watercourse, in a wetland, or other waterbody and a complete description as to the source and type of material or fill to be used.
18. A complete description of all work initiated or completed prior to the application submission at this site and within the vicinity. If there has been recent work done by others, this should be noted also.
19. As unavoidable losses to the aquatic resources (including streams and wetlands) must be mitigated, a detailed mitigation plan must be submitted where such losses will be incurred.
20. Statement discussing the avoidance and minimization, a presumption of NWPs and required for individual permits.
21. Monitoring of site, including photograph of site from marked sites, photograph of site after work is complete.
22. Complete copy of USACE application or Checklist (such as the PCN Checklist available from Southern Pacific Division), with supporting material.

From: Sorensen, Charles G NWO [mailto:Charles.G.Sorensen@usace.army.mil]
Sent: Friday, October 15, 2010 12:12 PM
To: Miller, Chris
Cc: Ames, Joel O NWO
Subject: XTO George Black Hawk 31X-6 Well location

Chris

Nelson

Thank you for letting the Garrison Dam/Lake Sakakawea Project provide comments regarding XTO Energy proposed George Black Hawk 31X-6 well location.

At this time the U.S. Army Corps of Engineers Garrison Dam/Lake Sakakawea Project request that XTO Energy take into consideration and if at all possible implement the following management practices during the exploration phase of the those wells listed in the request letter

Due to the close proximity of the well location to lands managed by the U.S. Army Corps of Engineers (USACE) there is a high risk that any storm water runoff from the well location will enter the Missouri River/Lake Sakakawea. As such the USACE would request that XTO Energy consider the construction/establishment of a catch trench located on the down sloping side of the well pad. Said trench would help in containing any hazardous wastes from the well pad. Those fluids that accumulate in the trench should be pumped out and disposed of properly

As previously mentioned the location of the proposed well site is extremely close to lands managed by the USACE and as previously stated the possibility for contamination of the Missouri River/Lake Sakakawea is of great concern to this agency. To aid in the prevention of hazardous wastes from entering the aforementioned bodies of water, the USACE would strongly recommend that a Closed Loop Drilling Method be used in the handling of all drilling fluids

Should living quarters be established onsite it is requested that all sewage collection systems be of a closed design and all holding tanks are to be either double walled or contained in a secondary containment system. All sewage waste removed from the well site location should be disposed of properly.

That all additional fill material required for the construction of the well pad is obtained from a private supplier whose material has been certified as being free of all noxious weeds.

Prior to the drilling rig and associated equipment being moved/ placed that all equipment be either pressure washed or air blasted off Tribal lands to prevent the possible transportation of noxious or undesirable vegetation onto Tribal lands as well as USACE managed lands.

That no surface occupancy be allowed within ½ mile of any known Threatened or Endangered Species critical habitat.

If possible, all construction activities should occur between August 15th and April 1st.

If trees are present, the appropriate dates are August 15th – February 1st. By constructing during these dates, disruptions to wildlife during the breeding season maybe kept to a minimum.

Cumulative impacts are often overlooked, in the completion of NEPA compliance. To adequately assess cumulative impacts, the following activities should consider.

a. Has the project area already been degraded, and if so, to what extent?

b. Are other ongoing activities in the area causing impacts, and if so, to what extent?

c. What is the likelihood that this project will lead to a number of associated projects?

d. What are the trends for activities and impacts in the area?

If you have any questions regarding the above recommendations please feel free to contact me

Charles Sorensen
Natural Resource Specialist
U.S. Army Corps of Engineers
Garrison Dam/Lake Sakakawea Project

Riverdale, North Dakota Office
(701) 654 7411 ext 232

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

REPLY TO
ATTENTION OF

November 2, 2010

Planning, Programs, and Project Management Division

Mr. Chris Miller
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101

Dear Mr. Miller:

The U.S. Army Corps of Engineers, Omaha District (Corps) has reviewed your letter dated October 13, 2010, regarding the proposed drilling and completion of up to 6 exploratory oil and gas wells at one pad located on the George Black Hawk 31X-6 site on the Fort Berthold Reservation in Dunn County, North Dakota. The Corps offers the following comments:

Since the proposed project does not appear to be located within Corps owned or operated lands, we are providing no floodplain or flood risk information. To determine if the proposed project may impact areas designated as a Federal Emergency Management Agency special flood hazard area, please consult the following floodplain management office:

North Dakota State Water Commission
Attention: Jeff Klein
900 East Boulevard Avenue
Bismarck, North Dakota 58505-0850
jjkein@nd.gov
T-701-328-4898
F-701-328-3747

Your plans should be coordinated with the U.S. Environmental Protection Agency, which is currently involved in a program to protect groundwater resources. If you have not already done so, it is recommended you consult with the U.S. Fish and Wildlife Service and the North Dakota Game and Fish Department regarding fish and wildlife resources. In addition, the North Dakota State Historic Preservation Office should be contacted for information and recommendations on potential cultural resources in the project area.

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Any proposed placement of dredged or fill material into waters of the United States (including jurisdictional wetlands) requires Department of the Army authorization under Section 404 of the Clean Water Act. You can visit the Corp's Regulatory website for permit applications and related information. Please review the information on the provided web site (https://www.nwo.usace.army.mil/html/od-r/district.htm) to determine if this project requires a 404 permit. For a detailed review of permit requirements, preliminary and final project plans should be sent to:

U.S. Army Corps of Engineers
Bismarck Regulatory Office
Attention: CENWO-OD-R-ND/Cimarosti
1513 South 12th Street
Bismarck, North Dakota 58504

If you have any questions, please contact Mr. John Shelman of my staff at (402) 995-2708 or by email at Johnathan.A.Shelman@usace.army.mil.

Sincerely,

Brad Thompson
Chief, Environmental Resources and Missouri Recovery
Program and Plan Formulation, Planning Branch
Planning, Programs and Project Management Division

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

October 20, 2010

Chris Miller, Project Manager
PBS&J
115 N. 28th Street, Suite 202
Billings, MT 59101-2045

Re: Six Proposed Exploratory Oil and Gas Wells by XTO Energy
On One Well Pad and Using One Access Road
At the Black Hawk 31X-6 Site on the Fort Berthold Reservation
Dunn County, North Dakota

Dear Mr. Miller:

This department has reviewed the information concerning the above-referenced project submitted under date of October 13, 2010, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. Development of the production facilities and any access roads or well pads should have a minimal effect on air quality provided measures are taken to minimize fugitive dust. However, operation of the wells has the potential to release air contaminants capable of causing or contributing to air pollution. We encourage the development and operation of the wells in a manner that is consistent with good air pollution control practices for minimizing emissions.

2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

3. Oil and gas related construction activities that are located within tribal boundaries within North Dakota may be required to obtain a permit to discharge storm water runoff from the U.S. Environmental Protection Agency. Further information may be obtained from the U.S. EPA's website or by calling the U.S. EPA – Region 8 at (303) 312-6312. Also, cities or

counties may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

North Dakota Department of Transportation

Francis G. Ziegler, P.E.
Director

John Hoeven
Governor

October 29, 2010

Chris Miller
Project Director
PBSJ
3810 Valley Commons Dr. – Suite 4
Bozeman, MT 59718

WELL PAD AND ACCESS ROAD PLANNED FOR GEORGE BLACK HAWK 31X-6 SITE, FORT BERTHOLD RESERVATION, NORTH DAKOTA

We have reviewed your October 13, 2010, letter.

The project referenced above will have no adverse effect on the North Dakota Department of Transportation highways.

However, if any work needs to be done on highway right-of-way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer, Walter Peterson at 701-774-2700.

RONALD J. HENKE, P.E., DIRECTOR - OFFICE OF PROJECT DEVELOPMENT

57:rjh:js

c: Walter A. Peterson, Williston District

608 East Boulevard Avenue • Bismarck, North Dakota 58505-0700
Information: (701) 328-2500 • FAX: (701) 328-0310 • TTY: (701) 328-4156 • www.dot.nd.gov

"VARIETY IN HUNTING AND FISHING"
NORTH DAKOTA GAME AND FISH DEPARTMENT
100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

November 1, 2010

Chris Miller
Project Director
PBS&J
115 N 28th Street, Suite 202
Billings, MT 59101-2045

Dear Mr. Miller:

RE: George Black Hawk 31X-6
Lawrence 24X-26

XTO Energy has proposed up to 12 exploratory oil and gas wells using two well pads and access roads on the Fort Berthold Reservation in Dunn County, North Dakota.

Our primary concern with oil and gas development is the fragmentation and loss of wildlife habitat associated with construction of well pads and access roads. We recommend that construction be avoided to the extent possible within native prairie, wooded draws, riparian corridors, and wetland areas.

We also suggest that botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests before construction begins.

Sincerely,

Paul Schadewald
Chief
Conservation & Communication Division

js

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
P.O. Box 1458
Bismarck, ND 58502-1458

October 26, 2010

Chris Miller
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045

RE: BIA – Applying for the drilling and completion of up to six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Reservation by XTO Energy location is named George Black Hawk 31X-6.

Dear Mr. Miller:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated October 13, 2010, concerning the drilling and completion of up to six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Reservation by XTO Energy located on George Black Hawk 31X-6.

Important Farmlands - NRCS has a major responsibility with FPPA in documenting conversion of farmland (i.e., prime, statewide, and local importance) to non-agricultural use. It appears your proposed project is not supported by Federal funding or actions; therefore, no further action is required.

Wetlands – The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose of, or to have the effect of, making agricultural production possible, loss of USDA benefits could occur. NRCS has developed the following guidelines for the installation of buried utilities. If these guidelines are followed, the impacts to the wetland(s) will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements: 1) Disturbance to the wetland(s) must be temporary, 2) no drainage of the wetland(s) is allowed (temporary or permanent), 3) mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained, 4) temporary side cast material must be placed in such a manner not to be dispersed in the wetland, and 5) all trenches must be backfilled to the original wetland bottom elevation.

NRCS would recommend that impacts to wetlands be avoided. If the project requires passage through or disturbance of a wetland, NRCS can complete a certified wetland determination, if requested by the landowner/operator.

If you have additional questions pertaining to FPPA, please contact Steve Sieler, State Soil Liaison, at (701) 530-2019.

Sincerely,

PAUL J. SWEENEY
State Conservationist

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

John Hoeven
Governor of North Dakota

North Dakota State Historical Board

Chester E. Nelson, Jr.
Bismarck - President

Gerald Gerntholz
Valley City - Vice President

Richard Kloubec
Fargo - Secretary

Albert I. Berger
Grand Forks

Calvin Grinnell
New Town

Diane K. Larson
Bismarck

A. Rurie Todd III
Jamestown

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Mark A. Zimmerman
Director
Parks and Recreation Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

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October 18, 2010

Mr. Chris Miller
Project Manager
PBS&J
115 North 28th Street, Suite 202
Billings MT 59101-2045

NDSHPO REF. 11-0071 BIA/Mandan Hidatsa Arikara Nation XTO Energy Well Pad and Access George Black Hawk 31X-6 Site [T148N R91W Section 6, NE NW] Dunn County, North Dakota

Dear Mr. Miller,

We received your correspondence dated October 13, 2010 regarding NDSHPO REF. 11-0071 BIA/Mandan Hidatsa Arikara Nation XTO Energy Well Pad and Access George Black Hawk 31X-6 Site [T148N R91W Section 6 NE NW] Dunn County, North Dakota. We request that a copy of cultural resource site forms and reports be sent to this office so that the cultural resources archives can be kept current for researchers.

Thank you for your consideration. Consultation is with MHAN THPO. If you have any questions please contact Susan Quinnell, Review & Compliance Coordinator at (701)328-3576 or squinnell@nd.gov

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and Director, State Historical Society of North Dakota

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: http://swc.nd.gov

November 4, 2010

Chris Miller
PBS & J
115 N 28th Street STE 202
Billings, MT 59101-2045

Dear Mr. Miller:

This is in response to your request for review of environmental impacts associated with the George Black Hawk 31X-6 Site: NE ¼ NW ¼ Section 6, Township 148 N, Range 91W (well pad and access road).

The proposed project have been reviewed by State Water Commission staff and the following comments are provided:

- The property is not located in an identified floodplain and it is believed the project will not affect an identified floodplain.

- It is the responsibility of the project sponsor to ensure that local, state and federal agencies are contacted for any required approvals, permits, and easements.

- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.

- No sole-source aquifers have been designated in ND.

There are no other concerns associated with this project that affect State Water Commission or State Engineer regulatory responsibilities.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 328-4969.

Sincerely,

Larry Knudtson
Research Analyst

LJK:dp/1570

JOHN HOEVEN, GOVERNOR
CHAIRMAN

TODD SANDO, P.E.
SECRETARY AND STATE ENGINEER

TRIBAL HISTORIC PRESERVATION
Mandan Hidatsa Arikara
Perry 'No Tears' Brady, Director.
404 Frontage Road,
New Town, North Dakota 58763
Ph/701-862-2474 fax/701-862-2490
pbrady@mhanation.com

Three Affiliated Tribes
MANDAN * HIDATSA * ARIKARA

October 15, 2010

Chris Miller, Project Manager
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045

RE: George Black Hawk 31X-6 Site: NE1/4 Section 6, Township 148N, Range 91W (well pad and access road)

Dear Mr. Miller

Thank you for your letter, after review of the documentation provided by your office, the Mandan Hidatsa Arikara Nations concur with the determination of 'No Adverse Affect'/No Historic Properties Affected' to any pre and post-historic relics, artifacts or sacred and cultural resources in the proposed project area. We respectfully request to be notified should any? NAGPRA issues arise as the project progresses..

We look forward to further opportunities to participate in any future Section 106 consultations.

Sincerely,

Perry 'No Tears' Brady,
THPO Director

Cc. file

Grinnell 34X-33
Agency Response Letters

United States Department of the Interior
BUREAU OF RECLAMATION
Dakotas Area Office
P.O. Box 1017
Bismarck, North Dakota 58502

TAKE PRIDE IN AMERICA

DK-5000
ENV-6.00

SEP 17 2010

Mr. Chris Miller
Project Manager
PBS&J
115 North 28th Street, Suite 202
Billings, MT 59101-2045

Subject: Solicitation for an Environmental Assessment for the Drilling and Completion of up to Six Exploratory Oil and Gas Wells using One Well Pad and One Access Road by XTO Energy, Inc., on the Fort Berthold Reservation in Dunn County, North Dakota

Dear Mr. Miller:

This letter is written to inform you that your letter dated September 1, 2010, was received and the information and map have been reviewed by Bureau of Reclamation staff.

Proposed oil well pads and access roads located in Dunn County could potentially affect Reclamation facilities in the form of the rural water pipelines of the Fort Berthold Rural Water System.

There are no water lines either existing or proposed for construction in the immediate vicinity of the well pad in the project area that you provided as shown below:

Grinnell 34X-33 Site: SW¼SE¼ of section 33, T. 149 N., R. 91 W.
NE¼NW¼ of section 6, T. 148 N., R. 91 W.

The location of the proposed access road was not described so we are providing an index map depicting water pipeline alignments in the vicinity of the proposed well sites and a copy of our requirements for crossing rural water lines. Since Reclamation is the lead federal agency for the Fort Berthold Rural Water System, we request that any work planned on the reservation be coordinated with Mr. Lester Crows Heart, Fort Berthold Rural Water Director, Three Affiliated Tribes, 308 4 Bears Complex, New Town, North Dakota 58763.

Thank you for providing the information and opportunity to comment. If you have any further questions, please contact me at 701-221-1288 or Kelly McPhillips at 701-221-1287. Questions concerning water line crossings can be directed to Ryan Waters at 701-221-1262.

Sincerely,

Ronald D. Melhouse

Ronald D. Melhouse
Environmental Specialist

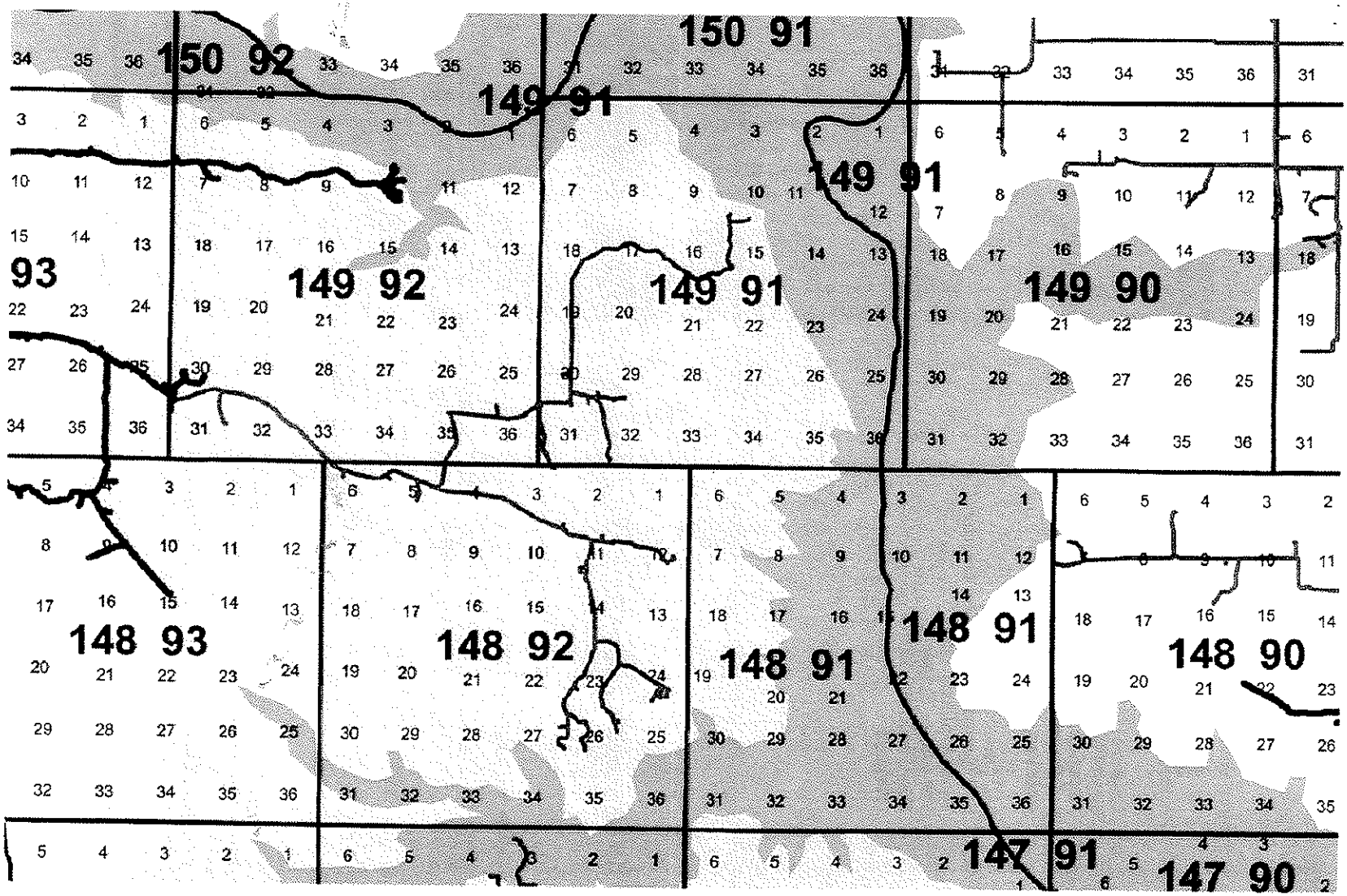
Enclosure

cc: See next page.

Subject: Solicitation for an Environmental Assessment for the Drilling and Completion of up to Six Exploratory Oil and Gas Wells using One Well Pad and One Access Road by XTO Energy, Inc., on the Fort Berthold Reservation in Dunn County, North Dakota 2

cc: Bureau of Indian Affairs
Great Plains Regional Office
Attention: Ms. Marilyn Bercier
115 Fourth Avenue S.E.
Aberdeen, SD 57401

Mr. Lester Crows Heart
Fort Berthold Rural Water Director
Three Affiliated Tribes
308 4 Bears Complex
New Town, ND 58763
(w/encl)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NOTES

1. Drawing is not to scale.
2. Clearances shown are minimum for all conditions.
3. Any additional permits required/needed for construction shall be provided by the Contractor.
4. Overhead conductor clearances shown are for 120 degrees F and final unloaded sag.
5. Erosion control measures, including revegetation, shall be implemented after completing construction activities.
6. The applicant shall submit a project description, and detailed construction plans showing plan views, profiles and sections, and grading plans of proposed work within Reclamation's Right-of-Way (ROW).
7. The applicant shall submit procedures, excavation plans, and schedules for crossing the Reclamation pipeline.
8. At the completion of construction activities the applicant shall submit AS-BUILT drawings that indicate the horizontal and vertical alignments of all utilities in areas disturbed during construction within Reclamation ROW.
9. Pipelines carrying hazardous materials or pollutants (e.g., oils, gasoline, natural gas, contaminated water and nonpotable water, etc.) should be designed for a reduced risk of failure in the portion within Reclamation's ROW. The design shall require either:
   - 9.1. Designing the crossing pipeline with an additional 50 percent working pressure factor, or,
   - 9.2. Use secondary containment (pipe casing) for all hazardous material pipelines.
10. All work within 18 inches of the facility shall be done using hand-held tools only. The excavation and backfill shall be made in the presence of Reclamation personnel or authorized representative.
11. The applicant and or his/her contractor shall be liable for all damages to Reclamation facilities and appurtenances as a result of construction and for any other damages or losses suffered by Reclamation including power, municipal and industrial water supply and communication losses.
12. For crossings of all Reclamation facilities, Reclamation personnel familiar with the facilities will advise and provide copies of existing files showing information about existing buried facilities (center of pipeline, approximate depth of cover size of pipe, class of pipe, etc.) to the applicant.
13. Typical Reclamation potable and raw water pipelines are PVC. If metallic pipelines or those containing metallic reinforcement (e.g., reinforced concrete) are encountered in the crossing a suitable bonded dielectric coating and cathodic protection may be required.

DETECTABLE WARNING TAPE

A. For potable water lines, the warning tape shall be a 3-inch-wide blue detectable tape imprinted with "CAUTION BURIED POTABLE WATER LINE".

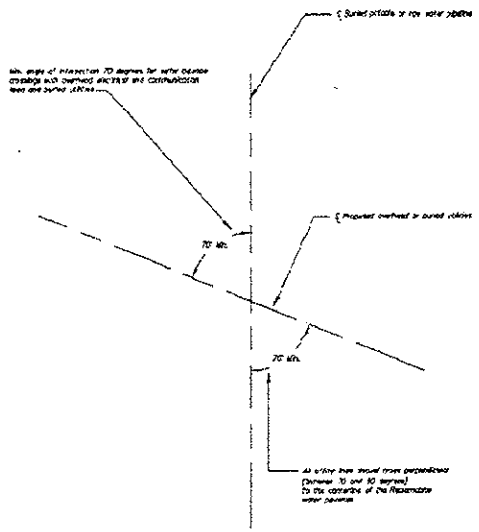
B. For nonpotable water lines, the warning tape shall be a 3-inch-wide purple detectable tape imprinted with "CAUTION BURIED NONPOTABLE WATER LINE".

C. For gas, oil, and other chemical lines, the warning tape shall be a 3-inch-wide yellow detectable tape imprinted with "CAUTION BURIED (type) LINE".

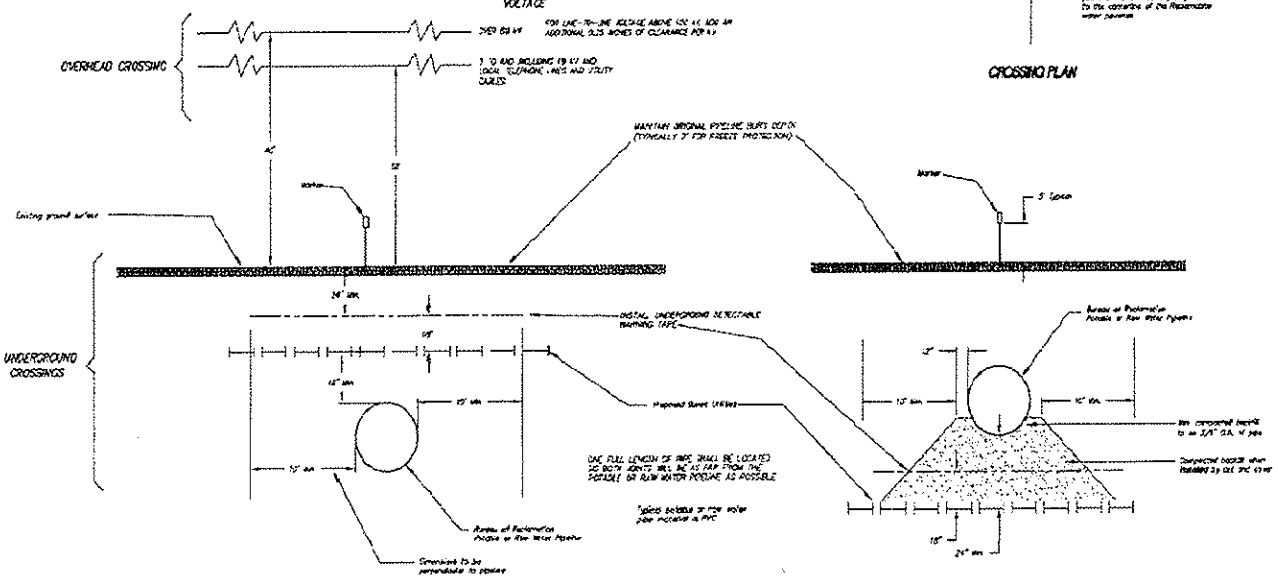
D. For telecommunications, telephone, television conduit(s), the warning tape shall be a 3-inch-wide orange detectable tape imprinted with "CAUTION BURIED (type) LINE".

E. For electrical conduit(s), the warning tape shall be a 3-inch-wide red detectable tape imprinted with "CAUTION BURIED ELECTRICAL LINE".

F. A marker sign shall be provided that shows the clearance and electrical line voltage. The warning sign should face oncoming traffic and state "DANGER, HIGH VOLTAGE OVERHEAD"



CROSSING PLAN



TYPICAL SECTION
POTABLE OR RAW WATER PIPELINE CROSSING

RECLAMATION

ALWAYS THINK SAFETY

MIRAJ RURAL WATER SYSTEMS
STANDARD CROSSING AND CLEARANCE REQ.
POTABLE AND RAW WATER PIPELINES

769-603-25480

SHEET 1 OF 1

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

REPLY TO
ATTENTION OF
North Dakota Regulatory Office

September 8, 2010

[NWO-2010-1995-BIS]

PBS&J
Attn: Chris Miller, Project Manager
115 North 28th Street, Suite 202
Billings, Montana 59101-2045

Dear Mr. Miller:

This is in response to your solicitation letter on behalf of **XTO Energy,** received on September 3, 2010 requesting Department of the Army (DA), United States Army Corps of Engineers (Corps) comments for six (6) proposed oil and gas exploratory wells on one well pad site **(Grinnel 34X-33)** located in Section 33, Township 149 North, Range 91 West and Section 6, Township 148 North, Range 91 West, Dunn County within the Fort Berthold Indian Reservation, North Dakota.

Corps Regulatory Offices administer Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Section 10 of the Rivers and Harbors Act regulates work in or affecting navigable waters. This would include work over, through, or under Section 10 water. Section 10 waters in North Dakota include the Missouri River (including Lake Sakakawea and Lake Oahe), Yellowstone River, James River south of Jamestown, North Dakota, Bois de Sioux River, Red River of the North, and the Upper Des Lacs Lake. Section 404 of the Clean Water Act regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

For any proposed well where the well line and/or bottom hole is under or crosses under Lake Sakakawea, regardless of depth, we require that project proponent provide a DA permit application (ENG Form 4345) to the Corps.

Enclosed for your information is the fact sheet for Nationwide Permit 12, Utility Line Activities. Pipeline projects are already authorized by Nationwide Permit 12 **provided the utility line can be placed without any change to pre-construction contours and all other proposed construction activities and facilities are in compliance with the Nationwide's permit conditions and 401 Water Quality Certification is obtained.** Please note the pre-construction notification requirements on page 2 of the fact sheet. **If a project involves any one of the seven notification requirements, the project proponent must submit a DA application.** Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 12 and 13 of the fact sheet. [The following info is for activities on a reservation] Please be advised that the United States Environmental Protection Agency (EPA), Region 8 has denied 401 Water Quality Certification for activities in perennial drainages and wetlands. Furthermore, EPA has placed conditions on activities in ephemeral and intermittent drainages. It is recommended you contact the U.S. Environmental Protection Agency, Region 8, Attn: Brent Truskowski, 1595 Wynkoop Street, Denver, Colorado 80202-1129 to review the conditions pursuant to Section 401 of the Clean Water Act prior to any construction.

Also enclosed for your information is the fact sheet for Nationwide Permit 14, Linear Transportation Projects. Road crossings are already authorized by Nationwide Permit 14 **provided the discharge does not cause the loss of greater than ½ acre of waters of the United States per crossing and all other proposed construction activities are in compliance with the Nationwide's permit conditions.** Please note the pre-construction notification requirements on the front page of the fact sheet. **If a project**

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involves (1) the loss of waters of the United States exceeding 1/10 acre per crossing; or (2) there is a discharge in a special aquatic site, including wetlands, the project proponent must submit a DA application prior to the start of construction. Please reference General Condition 27, Pre Construction Notification on page 8 of the fact sheet. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 11 and 12 of the fact sheet. [The following is included for activities on a reservation] Enclosed is a copy of the United States Environmental Protection Agency, Region 8's; General Conditions for all Nationwide Permits and specific conditions for Nationwide Permit 14.

In the event your project requires approval from the U.S. Army Corps of Engineers and cannot be authorized by Nationwide Permit(s), a Standard or Individual Permit will be required. A project that requires a Standard or Individual Permit is intensely reviewed and will require the issuance of a public notice. A Standard or Individual Permit generally requires a minimum of 120 days for processing but based on the project impacts and comments received through the public notice may extend beyond 120 days.

This correspondence letter is neither authorization for the proposed construction nor confirmation that the proposed project complies with the Nationwide Permit(s).

If any of these projects require a Section 10 and/or Section 404 permit, please complete and submit the enclosed Department of the Army permit application (ENG Form 4345) to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504. If you are unsure if a permit is required, you may submit an application; include a project location map, description of work, and construction methodology.

If we can be of further assistance or should you have any questions regarding our program, please do not hesitate to contact this office by letter of phone at (701) 255-0015.

Sincerely,

Daniel E. Cimarosti

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosures
ENG Form 4345
Fact Sheet NWP 12 and 14
EPA 401 Conditions for Nationwide Permits

See George Blackhawk for:
Instructions for preparing a department of the Army permit applications and the application form, fact sheet nationwide permit #12 and fact sheet nationwide permit #14

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

REPLY TO
ATTENTION OF

October 5, 2010

Planning, Programs, and Project Management Division

Mr. Chris Miller
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101

Dear Mr. Miller:

The U.S. Army Corps of Engineers, Omaha District (Corps) has reviewed your letter dated September 1, 2010, regarding the proposed drilling and completion of up to 6 exploratory oil and gas wells at one pad located on the Grinnell 34x33 site on the Fort Berthold Reservation in Dunn County, North Dakota. The Corps offers the following comments:

Since the proposed project does not appear to be located within Corps owned or operated lands, we are providing no floodplain or flood risk information. To determine if the proposed project may impact areas designated as a Federal Emergency Management Agency special flood hazard area, please consult the following floodplain management office:

North Dakota State Water Commission
Attention: Jeff Klein
900 East Boulevard Avenue
Bismarck, North Dakota 58505-0850
jjklein@nd.gov
T-701-328-4898
F-701-328-3747

Your plans should be coordinated with the U.S. Environmental Protection Agency, which is currently involved in a program to protect groundwater resources. If you have not already done so, it is recommended you consult with the U.S. Fish and Wildlife Service and the North Dakota Game and Fish Department regarding fish and wildlife resources. In addition, the North Dakota State Historic Preservation Office should be contacted for information and recommendations on potential cultural resources in the project area.

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Any proposed placement of dredged or fill material into waters of the United States (including jurisdictional wetlands) requires Department of the Army authorization under Section 404 of the Clean Water Act. You can visit the Corp's Regulatory website for permit applications and related information. Please review the information on the provided web site (https://www.nwo.usace.army.mil/html/od-r/district.htm) to determine if this project requires a 404 permit. For a detailed review of permit requirements, preliminary and final project plans should be sent to:

U.S. Army Corps of Engineers
Bismarck Regulatory Office
Attention: CENWO-OD-R-ND/Cimarosti
1513 South 12th Street
Bismarck, North Dakota 58504

If you have any questions, please contact Mr. John Shelman of my staff at (402) 995-2708 or by email at Johnathan.A.Shelman@usace.army.mil.

Sincerely,

Brad Thompson
Chief, Environmental Resources and Missouri Recovery
Program and Plan Formulation, Planning Branch
Planning, Programs and Project Management Division

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

September 14, 2010

Chris Miller, Project Manager
PBS&J
115 N. 28th Street, Suite 202
Billings, MT 59101-2045

Re: Up to Six Exploratory Oil and Gas Wells on One Well Pad and One Access Road by XTO Energy at the Grinnell 34X-33 Site on the Fort Berthold Reservation Dunn County, North Dakota

Dear Mr. Miller:

This department has reviewed the information concerning the above-referenced project submitted under date of September 1, 2010, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. Development of the production facilities and any access roads or well pads should have a minimal effect on air quality provided measures are taken to minimize fugitive dust. However, operation of the wells has the potential to release air contaminants capable of causing or contributing to air pollution. We encourage the development and operation of the wells in a manner that is consistent with good air pollution control practices for minimizing emissions.

2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

3. Oil and gas related construction activities that disturb five or more acres and are located within tribal boundaries within North Dakota may be required to obtain a permit to discharge storm water runoff from the U.S. Environmental Protection Agency. Further information may be obtained from the U.S. EPA's website or by calling the U.S. EPA – Region 8 at (303) 312-6312. Also, cities or counties may impose additional requirements and/or specific

best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

North Dakota Department of Transportation

Francis G. Ziegler, P.E.
Director

John Hoeven
Governor

RECEIVED

PBS & J

September 23, 2010

Chris Miller
Project Director
PBSJ
3810 Valley Commons Dr. – Suite 4
Bozeman, MT 59718

EA PROPOSED ACTION INCLUDES APPROVAL BY BIA AND BLM OF DRILLING AND COMPLETION OF UP TO SIX EXPLORATORY WELLS, GRINNELL, FORT BERTHOLD RESERVATION, NORTH DAKOTA

We have reviewed your September 1, 2010, letter.

The project referenced above will have no adverse effect on the North Dakota Department of Transportation highways.

However, if any work needs to be done on highway right-of-way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer, Walter Peterson at 701-774-2700.

RONALD J. HENKE, P.E., DIRECTOR - OFFICE OF PROJECT DEVELOPMENT

57:rjh:js

c: Walter A. Peterson, Williston District

PBS&J®

An employee-owned company

September 1, 2010

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 six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Indian Reservation by XTO Energy. The well pad and access road are proposed in the following location and shown on the enclosed project location map:

- Grinnell 34X-33 Site: SW ¼, SE ¼, Section 33, Township 149N, Range 91W
  NE ¼, NW ¼, Section 6, Township 148N, Range 91W

Development of the project would consist of the mechanical excavation and preparation of a single well pad that serves up to six wells and the construction of one new access road. The well pad is roughly 5.5 acres in size. The proposed access road for the Grinnell 34X-33 site is roughly 1255 feet long. The six wells would be located within a 1280-acre spacing unit and positioned to use the same access road. The drilling of these well sites is proposed to begin as early as the fourth quarter of 2010.

To ensure that social, economic, and environmental effects are analyzed accurately, we are requesting 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 this 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:

Chris Miller, Project Manager
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045
406-259-7979 (phone)
406-259-2033 (fax)
lcmiller@pbsj.com

If we do not hear from you by **September 30, 2010** we will assume that you have no comment on this project. Questions can be directed to Chris Miller using the contact information above or to Rich McEldowney at (406) 587-7275 (extension 223).

Thank you for your attention and input.

Sincerely,

Chris Miller
Project Director

3810 Valley Commons Drive • Suite 4 • Bozeman, Montana 5971

US Department of Transportation
Federal Aviation Administration

Date 9/13/10

No objection provided the Federal Aviation Administration is notified of construction or alterations as required by Federal Aviation Regulations, Part 77, Objects Affecting Navigable Airspace. Paragraph 77.13 Notice may be filed on line at https://oeaaa.faa.gov

Patricia L. Dressler, Environmental Protection Specialist
FAA/Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, ND 58504

U.S. Department of Homeland Security
Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267

FEMA

RECEIVED

PBS & J

R8-Mitigation

September 23, 2010

Chris Miller, Project Director
PBS&J
3810 Valley Commons Drive, Suite 4
Bozeman, MT 59718

Dear Mr. Miller:

Thank you for your inquiry regarding the proposed exploratory wells on the Fort Berthold Reservation, project Grinnell 43X-33. FEMA's major concern is if the property is located within a mapped Special Flood Hazard Area, as development in these areas requires further consideration.

We recommend that you contact the local Floodplain Manager, Cliff Whitman, DES Director for the Fort Berthold Reservation at 701-627-4805, to receive further guidelines regarding the impact that the drilling might have to the regulations and policies of the National Flood Insurance Program. Considering that floods are the most devastating of all natural disasters in this country, any efforts to reduce the impacts of that hazard is worthwhile.

Let me know if I can be of assistance and please feel free to contact me at 303-235-4721. Thank you for giving us the opportunity to assist you in the impending construction, drilling, completion and production of the wells on the Fort Berthold Reservation.

Sincerely,

David A. Kyner
NFIP Program Specialist

www.fema.gov

"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

September 21, 2010

Chris Miller
Project Director
PBS&J
115 N 28th Street, Suite 202
Billings, MT 59101-2045

Dear Mr. Miller:

RE: Grinnell 34X-33

XTO Energy has proposed up to six exploratory oil and gas wells using one well pad and access road on the Fort Berthold Reservation in Dunn County, North Dakota.

Our primary concern with oil and gas development is the fragmentation and loss of wildlife habitat associated with construction of well pads and access roads. We recommend that construction be avoided to the extent possible within native prairie, wooded draws, riparian corridors, and wetland areas.

We also suggest that botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests before construction begins.

We appreciate the use of a single well pad for multiple wells as a means to reduce impacts to the environment, and support the use of such where feasible.

Sincerely,

Paul Schadewald

Paul Schadewald
Chief
Conservation & Communication Division

js

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
P.O. Box 1458
Bismarck, ND 58502-1458

October 26, 2010

Chris Miller
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045

RE: BIA – Applying for the drilling and completion of up to six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Reservation by XTO Energy location is named Grinnell 34X-33.

Dear Mr. Miller:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated September 1, 2010, concerning the drilling and completion of up to six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Reservation by XTO Energy located on Grinnell 34X-33.

Important Farmlands - NRCS has a major responsibility with FPPA in documenting conversion of farmland (i.e., prime, statewide, and local importance) to non-agricultural use. It appears your proposed project is not supported by Federal funding or actions; therefore, no further action is required.

Wetlands – The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose of, or to have the effect of, making agricultural production possible, loss of USDA benefits could occur. NRCS has developed the following guidelines for the installation of buried utilities. If these guidelines are followed, the impacts to the wetland(s) will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements: 1) Disturbance to the wetland(s) must be temporary, 2) no drainage of the wetland(s) is allowed (temporary or permanent), 3) mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained, 4) temporary side cast material must be placed in such a manner not to be dispersed in the wetland, and 5) all trenches must be backfilled to the original wetland bottom elevation.

NRCS would recommend that impacts to wetlands be avoided. If the project requires passage through or disturbance of a wetland, NRCS can complete a certified wetland determination, if requested by the landowner/operator.

If you have additional questions pertaining to FPPA, please contact Steve Sieler, State Soil Liaison, at (701) 530-2019.

Sincerely,

PAUL J. SWEENEY
State Conservationist

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

John Hoeven
Governor of North Dakota

North Dakota
State Historical Board

Chester E. Nelson, Jr.
Bismarck - President

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Valley City - Vice President

Richard Kloubec
Fargo - Secretary

Albert I. Berger
Grand Forks

Calvin Grinnell
New Town

Diane K. Larson
Bismarck

A. Rutie Todd III
Jamestown

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Mark A. Zimmerman
Director
Parks and Recreation Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

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September 8, 2010

Mr. Chris Miller, Project Manager
PBS&J
115 North 28th St Suite 202
Billings MT 59101-2045

NDSHPO REF. 10-2164 BIA/BLM/MHAN XTO Energy on one well pad and access road in portions of
[T149N R91W Section 33 SW SE] Dunn County
[T148N R91W Section 6 NE NW] Dunn County, North Dakota

Dear Mr. Miller,

We received your letter regarding NDSHPO REF. 10-2164 BIA/BLM/MHAN XTO Energy on one well pad and access road in Dunn County, North Dakota, as detailed above.
We request that a copy of cultural resource site forms and reports be sent to this office so that the cultural resources archives can be kept current for researchers. Perhaps one might consider putting TCP (Traditional Cultural Properties) related information in separate reports not sent to this office.

Thank you for your consideration. Consultation is with MHAN THPO. If you have any questions please contact Susan Quinnell, Review & Compliance Coordinator at (701)328-3576 or squinnell@nd.gov

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and Director, State Historical Society of North Dakota

North Dakota Heritage Center • 612 East Boulevard Avenue, Bismarck, ND 58505-0830 • Phone 701-328-2666 • Fax: 701-328-3710
Email: histsoc@nd.gov • Web site: http://history.nd.gov • TTY: 1-800-366-6888

TRIBAL HISTORIC PRESERVATION
Mandan Hidatsa Arikara
Perry 'No Tears' Brady, Director.
404 Frontage Road,
New Town, North Dakota 58763
Ph/701-862-2474 fax/701-862-2490

Chris Miller, Project Manager
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045

Dear Mr. Miller,

RE: Recommendation and Concurrence:

As Director of the Tribal Historic Preservation Office and the Tribal Historical Preservation Officer representing the Mandan Hidatsa Arikara Nation I Concur with the Development of The Project.

Grinnell 34x-33 Site: SW1/4, SE ¼, Section 33, Township 149N, Range 91 W
NE1/4, NW ¼, Section 6, Township 148N, Range 91 W

If you have any questions or need additional information, you can contact me at (701) 862-2474 or 862-2475 or Cell Number (701) 421-0547

Sincerely,

Perry "No Tears" Brady
Direct of the THPO
Mandan, Hidatsa, & Arikara Nation

Cc. file

Grinnell 41X-1
Agency Response Letters

United States Department of the Interior
BUREAU OF RECLAMATION
Dakotas Area Office
P.O. Box 1017
Bismarck, North Dakota 58502

TAKE PRIDE IN AMERICA

DK-5000
ENV-6.00

OCT 20 2010

Mr. Chris Miller
Project Manager
PBS&J
115 N 28th Street, Suite 202
Billings, MT 59101-2045

Subject: Solicitation for an Environmental Assessment for the Proposed Construction, Drilling, Completion, and Production of Up to Six Exploratory Oil and Gas Wells on Each of Two Well Pads and Access Roads by XTO Energy on the Fort Berthold Reservation in Dunn County, North Dakota

Dear Mr. Miller:

This letter is written to inform you that we received your letters of October 7 and 13, 2010, and the information and maps have been reviewed by Bureau of Reclamation staff.

The proposed oil well sites located in Dunn County could potentially affect Reclamation facilities in the form of the rural water pipelines of the Fort Berthold Rural Water System since the well access roads, service utilities, and other developments are not specifically identified.

- George Black Hawk 31X-6 Site: NE¼NW¼ of section 6, T148N, R91W Dunn County, ND – well pad and access road
- Grinnell 41X-1 Site: NE¼NE¼ of section 1, T148N, R92W Dunn County, ND – well pad and access road
- Grinnell 41X-1 Site: SE¼SW¼ of section 33, T149N, R91W Dunn County, ND – access road

Note that blue and orange lines represent Reclamation water

We are providing an index map depicting water pipeline alignments in the vicinity of the proposed well site and surrounding area to aid you in identification of potential for adverse effect to or crossings of federal facilities. Also, should you have need to cross a Fort Berthold Rural Water System pipeline, please refer to the enclosed sheet for pipeline crossings specifications and contact our engineer Ryan Waters, as below. Since Reclamation is the lead federal agency for the Fort Berthold Rural Water System, we request that any work planned on the reservation be coordinated with Mr. Lester Crows Heart, Fort Berthold Rural Water Director, Three Affiliated Tribes, 308, 4 Bears Complex, New Town, North Dakota 58763.

Thank you for providing the information and opportunity to comment. If you have any further environmental questions, please contact me at 701-221-1287 or for engineering questions Ryan Waters General Engineer at 701-221-1262.

Sincerely,

Kelly B. McPhillips
Environmental Specialist

Enclosures – 2

cc: Bureau of Indian Affairs
Great Plains Regional Office
Attention: Ms. Marilyn Bercier
Regional Environmental Scientist
115 Fourth Avenue S.E.
Aberdeen, SD 57401

Mr. Lester Crows Heart
Fort Berthold Rural Water Director
Three Affiliated Tribes
308 4 Bears Complex
New Town, ND 58763
(w/encl)

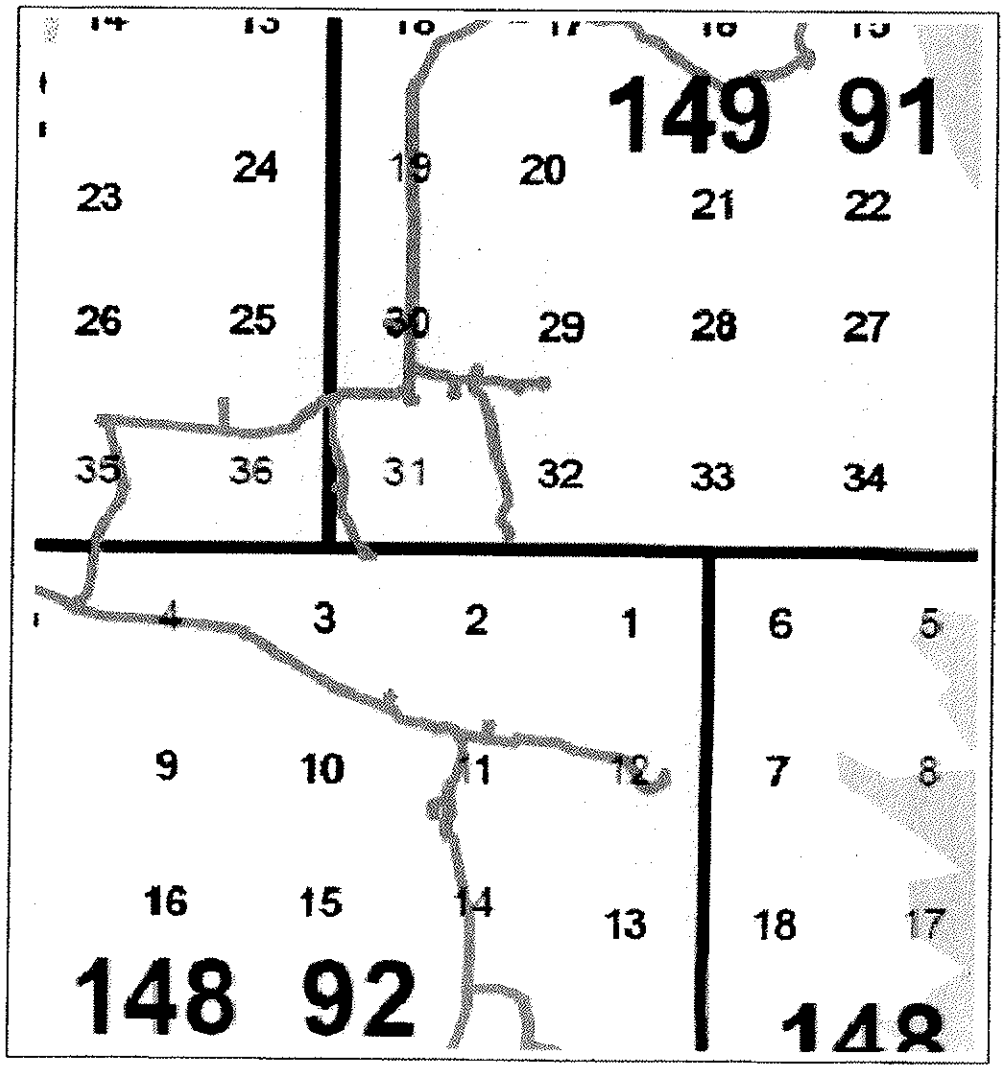
Subject: Solicitation for an Environmental Assessment for the Proposed Construction, Drilling, Completion, and Production of Up to Six Exploratory Oil and Gas Wells on Each of Two Well Pads and Access Roads by XTO Energy on the Fort Berthold Reservation in Dunn County, North Dakota

George Black Hawk 31X-6 Site: NE¼ NW¼ of section 6, T148N, R91W Dunn County, ND – well pad and access road

Grinnell 41X-1 Site: NE¼ NE¼ of section 1, T148N, R92W Dunn County, ND – well pad and access road

Grinnell 41X-1 Site: SE¼ SW¼ of section 33, T149N, R91W Dunn County, ND – access road

Note that blue and orange lines represent Reclamation water



NOTES

1. Drawing is not to scale.
2. Clearances shown are minimum for all conditions.
3. Any additional permits required/needed for construction shall be provided by the Contractor.
4. Overhead conductor clearances shown are for 120 degrees F and final unloaded sag.
5. Erosion control measures, including re-vegetation, shall be implemented after completing construction activities.
6. The applicant shall submit a project description, and detailed construction plans showing plan views, profiles and sections, and grading plans of proposed work within Reclamation's Right-of-Way (ROW).
7. The applicant shall submit procedures, excavation plans, and schedules for crossing the Reclamation pipeline.
8. At the completion of construction activities the applicant shall submit AS-BUILT drawings that indicate the horizontal and vertical alignments of all utilities in areas disturbed during construction within Reclamation ROW.
9. Pipelines carrying hazardous materials or pollutants (e.g., oils, gasoline, natural gas, contaminated water and inappropriate water, etc.) should be designed for a reduced rate of failure in the portion within Reclamation's ROW. The design shall require either:
   - 9.1. Designing the crossing pipeline with an additional 50 percent working pressure factor, or
   - 9.2. Use secondary containment (pipe casing) for all hazardous material pipelines.
10. All work within 18 inches of the facility shall be done using hand-held tools only. The excavation and backfill shall be made in the presence of Reclamation personnel or authorized representative.
11. The applicant and or his/her contractor shall be liable for all damages to Reclamation facilities and appurtenances as a result of construction and for any other damages or losses suffered by Reclamation including power, municipal and industrial water supply and communication losses.
12. For crossings of all Reclamation facilities, Reclamation personnel familiar with the facilities will obtain and provide copies of existing files showing information about existing buried facilities (center of pipeline, approximate depth of cover size of pipe, class of pipe, etc.) to the applicant.
13. Typical Reclamation potable and raw water pipelines are PVC. If metallic pipelines or those containing metallic reinforcement (e.g., reinforced concrete) are encountered in the crossing a suitable benefit dielectric coating and cathodic protection may be required.

DETECTABLE WARNING TAPE

A. For potable water lines, the warning tape shall be a 3-inch-wide blue detectable tape imprinted with "CAUTION BURIED POTABLE WATER LINE".

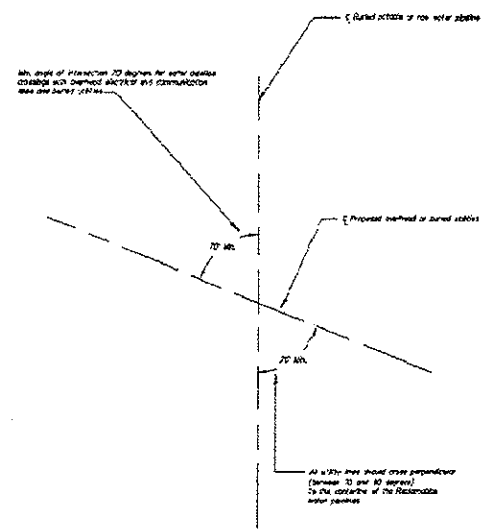
B. For nonpotable water lines, the warning tape shall be a 3-inch-wide purple detectable tape imprinted with "CAUTION BURIED NONPOTABLE WATER LINE".

C. For gas, oil, and steam chemical lines, the warning tape shall be a 3-inch-wide yellow detectable tape imprinted with "CAUTION BURIED (type) LINE".

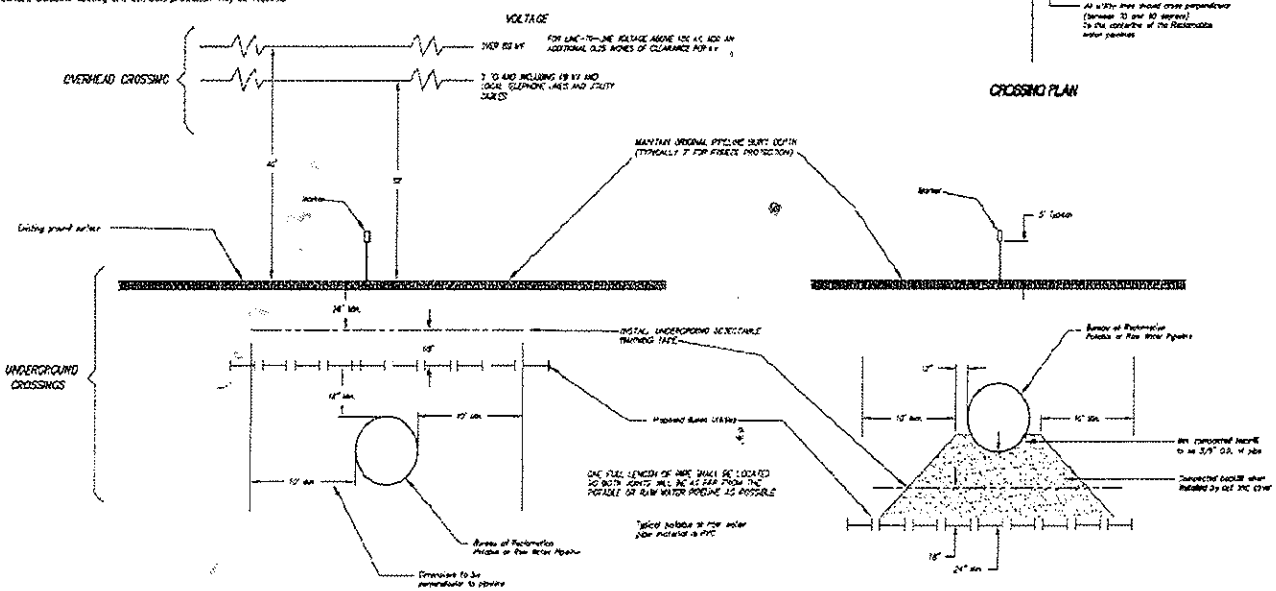
D. For telecommunications, telephone, television conduit(s), the warning tape shall be a 3-inch-wide orange detectable tape imprinted with "CAUTION BURIED (type) LINE".

E. For electrical conduit(s), the warning tape shall be a 3-inch-wide red detectable tape imprinted with "CAUTION BURIED ELECTRICAL LINE".

F. A marker sign shall be provided that shows the clearance and electrical line voltage. The warning sign should face oncoming traffic and state "DANGER, HIGH VOLTAGE OVERHEAD".



CROSSING PLAN



TYPICAL SECTION
POTABLE OR RAW WATER PIPELINE CROSSING

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

MR&I RURAL WATER SYSTEMS
STANDARD CROSSING AND CLEARANCE REQ.
POTABLE AND RAW WATER PIPELINES

769-603-25480

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

REPLY TO
ATTENTION OF

October 26, 2010

North Dakota Regulatory Office

PBS&J
Attn: ,Chris Miller, Project Manager
115 North 28th Street, Suite 202
Billings, Montana 59101-2045

Dear Mr. Miller:

This is in response to your solicitation letter on behalf of **XTO Energy**, received on October 12, 2010 requesting Department of the Army (DA), United States Army Corps of Engineers (Corps) comments for six proposed oil and gas exploratory wells using one a well pad and one access road within the Fort Berthold Indian Reservation: **Grinnell 41X-1 Site: Section 1, Township 148 North, Range 92 West, (well pad and access road) and Section 33, Township 149 North, Range 91 West, (access road), Dunn County, North Dakota.**

Corps Regulatory Offices administer Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Section 10 of the Rivers and Harbors Act regulates work in or affecting navigable waters. This would include work over, through, or under Section 10 water. Section 10 waters in North Dakota are the Missouri River (including Lake Sakakawea and Lake Oahe), Yellowstone River, James River south of Jamestown, North Dakota, Bois de Sioux River, Red River of the North, and the Upper Des Lacs Lake. Section 404 of the Clean Water Act regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

For any proposed well where the well line and/or bottom hole is under or crosses under Lake Sakakawea, regardless of depth, we require that project proponent provide a DA permit application (ENG Form 4345) to the Corps.

Enclosed for your information is the fact sheet for Nationwide Permit 12, Utility Line Activities. Pipeline projects are already authorized by Nationwide Permit 12 **provided the utility line can be placed without any change to pre-construction contours and all other proposed construction activities and facilities are in compliance with the Nationwide's permit conditions and 401 Water Quality Certification is obtained.** Please note the pre-construction notification requirements on page 2 of the fact sheet. **If a project involves any one of the seven notification requirements, the project proponent must submit a DA application.** Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 12 and 13 of the fact sheet. [The following info is for activities on a reservation] Please be advised that the United States Environmental Protection Agency (EPA), Region 8 has denied 401 Water Quality Certification for activities in perennial drainages and wetlands. Furthermore, EPA has placed conditions on activities in ephemeral and intermittent drainages. It is recommended you contact the U.S. Environmental Protection Agency, Region 8, Attn: Brent Truskowski, 1595 Wynkoop Street, Denver, Colorado 80202-1129 to review the conditions pursuant to Section 401 of the Clean Water Act prior to any construction.

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Also enclosed for your information is the fact sheet for Nationwide Permit 14, Linear Transportation Projects. Road crossings are already authorized by Nationwide Permit 14 **provided the discharge does not cause the loss of greater than ½ acre of waters of the United States per crossing and all other proposed construction activities are in compliance with the Nationwide's permit conditions.** Please note the pre-construction notification requirements on the front page of the fact sheet. **If a project involves (1) the loss of waters of the United States exceeding 1/10 acre per crossing; or (2) there is a discharge in a special aquatic site, including wetlands, the project proponent must submit a DA application prior to the start of construction.** Please reference General Condition 27, Pre Construction Notification on page 8 of the fact sheet. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 11 and 12 of the fact sheet. [The following is included for activities on a reservation] Enclosed is a copy of the United States Environmental Protection Agency, Region 8's; General Conditions for all Nationwide Permits and specific conditions for Nationwide Permit 14.

In the event your project requires approval from the U.S. Army Corps of Engineers and cannot be authorized by Nationwide Permit(s), a Standard or Individual Permit will be required. A project that requires a Standard or Individual Permit is intensely reviewed and will require the issuance of a public notice. A Standard or Individual Permit generally requires a minimum of 120 days for processing but based on the project impacts and comments received through the public notice may extend beyond 120 days.

This correspondence letter is neither authorization for the proposed construction nor confirmation that the proposed project complies with the Nationwide Permit(s).

If any of these projects require a Section 10 and/or Section 404 permit, please complete and submit the enclosed Department of the Army permit application (ENG Form 4345) to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504. If you are unsure if a permit is required, you may submit an application; include a project location map, description of work, and construction methodology.

If we can be of further assistance or should you have any questions regarding our program, please do not hesitate to contact this office by letter of phone at (701) 255-0015.

Sincerely,

Daniel E. Cimarosti

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosure
ENG Form 4345
Fact Sheet NWP 12 and 14

CF w/o encl
EPA Denver (Brent Truskowski)

Instructions for preparing a Department of the Army permit application and the application forms, fact sheet nationwide permit #12 and fact sheet nationwide permit #14 are provided in comment letters for George Blackhawk 31X-6.

From: Sorensen, Charles G NWO [mailto:Charles.G.Sorensen@usace.army.mil]
Sent: Thursday, October 14, 2010 2:58 PM
To: Miller, Chris
Cc: Ames, Joel O NWO
Subject: Comments on the XTO Grinnell 41x-1 Well

Chris

Thanks for letting the Garrison Dam/Lake Sakakawea Project provide comments regarding XTO's proposed Grinnell 41x-1 Well.

At this time the U.S. Army Corps of Engineers Garrison Dam/Lake Sakakawea Project request that XTO Energy take into consideration and if at all possible implement the following management practices during the exploration phase of the those wells listed in the request letter

Due to the close proximity of the well location to lands managed by the U.S. Army Corps of Engineers (USACE) there is a high risk that any storm water runoff from the well location will enter the Missouri River/Lake Sakakawea. As such the USACE would request that XTO Energy Company consider the construction/establishment of a catch trench located on the down sloping side of the well pad. Said trench would help in containing any hazardous wastes from the well pad. Those fluids that accumulate in the trench should be pumped out and disposed of properly

As previously mentioned the location of the proposed well site is extremely close to lands managed by the USACE and as previously stated the possibility for contamination of the Missouri River/Lake Sakakawea is of great concern to this agency. To aid in the prevention of hazardous wastes from entering the aforementioned bodies of water, the USACE would strongly recommend that a Closed Loop Drilling Method be used in the handling of all drilling fluids

Should living quarters be established onsite it is requested that all sewage collection systems be of a closed design and all holding tanks are to be either double walled or contained in a secondary containment system. All sewage waste removed from the well site location should be disposed of properly.

That all additional fill material required for the construction of the well pad is obtained from a private supplier whose material has been certified as being free of all noxious weeds.

Prior to the drilling rig and associated equipment being moved/ placed that all equipment be either pressure washed or air blasted off Tribal lands to prevent the possible transportation of noxious or undesirable vegetation onto Tribal lands as well as USACE managed lands.

That no surface occupancy be allowed within ½ mile of any known Threatened or Endangered Species critical habitat.

If possible, all construction activities should occur between August 15th and April 1st.

If trees are present, the appropriate dates are August 15th – February 1st. By constructing during these dates, disruptions to wildlife during the breeding season maybe kept to a minimum.

Cumulative impacts are often overlooked, in the completion of NEPA compliance. To adequately assess cumulative impacts, the following activities should consider.

a. Has the project area already been degraded, and if so, to what extent?

b. Are other ongoing activities in the area causing impacts, and if so, to what extent?

c. What is the likelihood that this project will lead to a number of associated projects?

d. What are the trends for activities and impacts in the area?

If you have any questions regarding the above recommendations please feel free to contact me

Charles Sorensen

Natural Resource Specialist

U.S. Army Corps of Engineers

Garrison Dam/Lake Sakakawea Project

Charles Sorensen
Natural Resource Specialist
U.S. Army Corps of Engineers
Garrison Dam/Lake Sakakawea Project

Riverdale, North Dakota Office
(701) 654 7411 ext 232

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

REPLY TO
ATTENTION OF

November 2, 2010

Planning, Programs, and Project Management Division

Mr. Chris Miller
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101

Dear Mr. Miller:

The U.S. Army Corps of Engineers, Omaha District (Corps) has reviewed your letter dated October 7, 2010, regarding the proposed drilling and completion of up to 6 exploratory oil and gas wells at one pad located on the Grinnell 41X-1 site on the Fort Berthold Reservation in North Dakota. The Corps offers the following comments:

Since the proposed project does not appear to be located within Corps owned or operated lands, we are providing no floodplain or flood risk information. To determine if the proposed project may impact areas designated as a Federal Emergency Management Agency special flood hazard area, please consult the following floodplain management office:

North Dakota State Water Commission
Attention: Jeff Klein
900 East Boulevard Avenue
Bismarck, North Dakota 58505-0850
jjkein@nd.gov
T-701-328-4898
F-701-328-3747

Your plans should be coordinated with the U.S. Environmental Protection Agency, which is currently involved in a program to protect groundwater resources. If you have not already done so, it is recommended you consult with the U.S. Fish and Wildlife Service and the North Dakota Game and Fish Department regarding fish and wildlife resources. In addition, the North Dakota State Historic Preservation Office should be contacted for information and recommendations on potential cultural resources in the project area.

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Any proposed placement of dredged or fill material into waters of the United States (including jurisdictional wetlands) requires Department of the Army authorization under Section 404 of the Clean Water Act. You can visit the Corp's Regulatory website for permit applications and related information. Please review the information on the provided web site (https://www.nwo.usace.army.mil/html/od-r/district.htm) to determine if this project requires a 404 permit. For a detailed review of permit requirements, preliminary and final project plans should be sent to:

U.S. Army Corps of Engineers
Bismarck Regulatory Office
Attention: CENWO-OD-R-ND/Cimarosti
1513 South 12th Street
Bismarck, North Dakota 58504

If you have any questions, please contact Mr. John Shelman of my staff at (402) 995-2708 or by email at Johnathan.A.Shelman@usace.army.mil.

Sincerely,

Brad Thompson
Chief, Environmental Resources and Missouri Recovery
Program and Plan Formulation, Planning Branch
Planning, Programs and Project Management Division

North Dakota Department of Transportation

Francis G. Ziegler, P.E.
Director

John Hoeven
Governor

October 29, 2010

Chris Miller
Project Director
PBSJ
3810 Valley Commons Dr. – Suite 4
Bozeman, MT 59718

WELL PAD AND ACCESS ROAD PLANNED FOR GRINNELL 41X-1 SITE, FORT BERTHOLD RESERVATION, NORTH DAKOTA

We have reviewed your October 7, 2010, letter.

The project referenced above will have no adverse effect on the North Dakota Department of Transportation highways.

However, if any work needs to be done on highway right-of-way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer, Walter Peterson at 701-774-2700.

RONALD J. HENKE, P.E., DIRECTOR - OFFICE OF PROJECT DEVELOPMENT

57:rjh:js

c: Walter A. Peterson, Williston District

608 East Boulevard Avenue • Bismarck, North Dakota 58505-0700
Information: (701) 328-2500 • FAX: (701) 328-0310 • TTY: (701) 328-4156 • www.dot.nd.gov

"VARIETY IN HUNTING AND FISHING"
NORTH DAKOTA GAME AND FISH DEPARTMENT
100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

October 26, 2010

Chris Miller
Project Manager
PBS&J
115 N 28th Street, Suite 202
Billings, MT 59101-2045

Dear Mr. Miller:

RE: Grinnell 41X-1

XTO Energy has proposed up to six exploratory oil and gas wells using one well pad and access road on the Fort Berthold Reservation in Dunn County, North Dakota.

Our primary concern with oil and gas development is the fragmentation and loss of wildlife habitat associated with construction of well pads and access roads. We recommend that construction be avoided to the extent possible within native prairie, wooded draws, riparian corridors, and wetland areas.

We also suggest that botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests before construction begins.

Sincerely,

Paul Schadewald
Chief
Conservation & Communication Division

js

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
P.O. Box 1458
Bismarck, ND 58502-1458

October 26, 2010

Chris Miller
PBS&J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045

RE: BIA – Applying for the drilling and completion of up to six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Reservation by XTO Energy location is named Grinnell 41X-1.

Dear Mr. Miller:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated October 7, 2010, concerning the drilling and completion of up to six exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Reservation by XTO Energy located on Grinnell 41X-1.

Important Farmlands - NRCS has a major responsibility with FPPA in documenting conversion of farmland (i.e., prime, statewide, and local importance) to non-agricultural use. It appears your proposed project is not supported by Federal funding or actions; therefore, no further action is required.

Wetlands – The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose of, or to have the effect of, making agricultural production possible, loss of USDA benefits could occur. NRCS has developed the following guidelines for the installation of buried utilities. If these guidelines are followed, the impacts to the wetland(s) will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements: 1) Disturbance to the wetland(s) must be temporary, 2) no drainage of the wetland(s) is allowed (temporary or permanent), 3) mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained, 4) temporary side cast material must be placed in such a manner not to be dispersed in the wetland, and 5) all trenches must be backfilled to the original wetland bottom elevation.

NRCS would recommend that impacts to wetlands be avoided. If the project requires passage through or disturbance of a wetland, NRCS can complete a certified wetland determination, if requested by the landowner/operator.

If you have additional questions pertaining to FPPA, please contact Steve Sieler, State Soil Liaison, at (701) 530-2019.

Sincerely,

PAUL J. SWEENEY
State Conservationist

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

John Hoeven
Governor of North Dakota

North Dakota
State Historical Board

Chester E. Nelson, Jr.
Bismarck - President

Gerald Gerntholz
Valley City - Vice President

Richard Kloubec
Fargo - Secretary

Albert I. Berger
Grand Forks

Calvin Grinnell
New Town

Diane K. Larson
Bismarck

• A. Ruric Todd III
Jamestown

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
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Mark A. Zimmerman
Director
Parks and Recreation Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

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October 15, 2010

Mr. Chris Miller
Project Manager
PBS&J
115 North 28th Street, Suite 202
Billings MT 59101-2045

NDSHPO REF. 11-0060 BIA/Mandan Hidatsa Arikara Nation XTO Energy Well Pad and Access Grinnell 41X-1 Site [T148N R92W Section 1, NE NE] and [T149N R91W Section 33 SE SW] Dunn County, North Dakota

Dear Mr. Dunn,

We received your correspondence dated October 11, 2010 regarding NDSHPO REF. 11-0060 BIA/Mandan Hidatsa Arikara Nation XTO Energy Well Pad and Access Grinnell 41X-1 Site [T148N R92W Section 1, NE NE] and [T149N R91W Section 33 SE SW] Dunn. We request that a copy of cultural resource site forms and reports be sent to this office so that the cultural resources archives can be kept current for researchers.

Thank you for your consideration. Consultation is with MHAN THPO. If you have any questions please contact Susan Quinnell, Review & Compliance Coordinator at (701)328-3576 or squinnell@nd.gov

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and Director, State Historical Society of North Dakota

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: http://swc.nd.gov

November 4, 2010

Chris Miller
PBS & J
115 N 28th Street STE 202
Billings, MT 59101-2045

Dear Mr. Miller:

This is in response to your request for review of environmental impacts associated with the Grinnell 41X-1 Site: NE ¼ Section 1, Township 148N, Range 92W (well pad and access road), SE ¼ SW ¼ Section 33, Township 149N, Range 91 W (access road).

The proposed project have been reviewed by State Water Commission staff and the following comments are provided:

- The property is not located in an identified floodplain and it is believed the project will not affect an identified floodplain.

- It is the responsibility of the project sponsor to ensure that local, state and federal agencies are contacted for any required approvals, permits, and easements.

- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.

- No sole-source aquifers have been designated in ND.

There are no other concerns associated with this project that affect State Water Commission or State Engineer regulatory responsibilities.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 328-4969.

Sincerely,

Larry Knudson
Research Analyst

LJK:dp/1570

JOHN HOEVEN, GOVERNOR
CHAIRMAN

TODD SANDO, P.E.
SECRETARY AND STATE ENGINEER

TRIBAL HISTORIC PRESERVATION
Mandan Hidatsa Arikara
Perry 'No Tears' Brady, Director,
404 Frontage Road,
New Town, North Dakota 58763
Ph/701-862-2474 fax/701-862-2490
pbrady@3affiliated.com

Three Affiliated Tribes
MANDAN * HIDATSA * ARIKARA

October 13, 2010

Chris Miller, Project Manager
PBS & J
115 North 28th Street, Suite 202
Billings, Montana 59101-2045

Grinnell 41X-1 Site: NE ¼ Section 1, Township 148N, Range 92W (well pad and access road) SE ¼ SW ¼ Section 33, Township 149N, Range 91 W (access road)

Dear Mr. Miller:

As Director of the Tribal Historic Preservation Office and the Tribal Historical Preservation Office representing the Mandan Hidatsa Arikara Nation. **I Concur with the Grinnell 41X-1 site/ Section 102(2) (D) (IV) of NEPA**

If you have any questions or need additional information, you can contact my cell # (701) 421-0547 or me at Tribal Historic Preservation Office at anytime.

Sincerely:

Perry "No Tear" Brady
Director of the Mandan, Hidatsa,
Arikara Nation

Cc. file

Notice of Availability and Appeal Rights

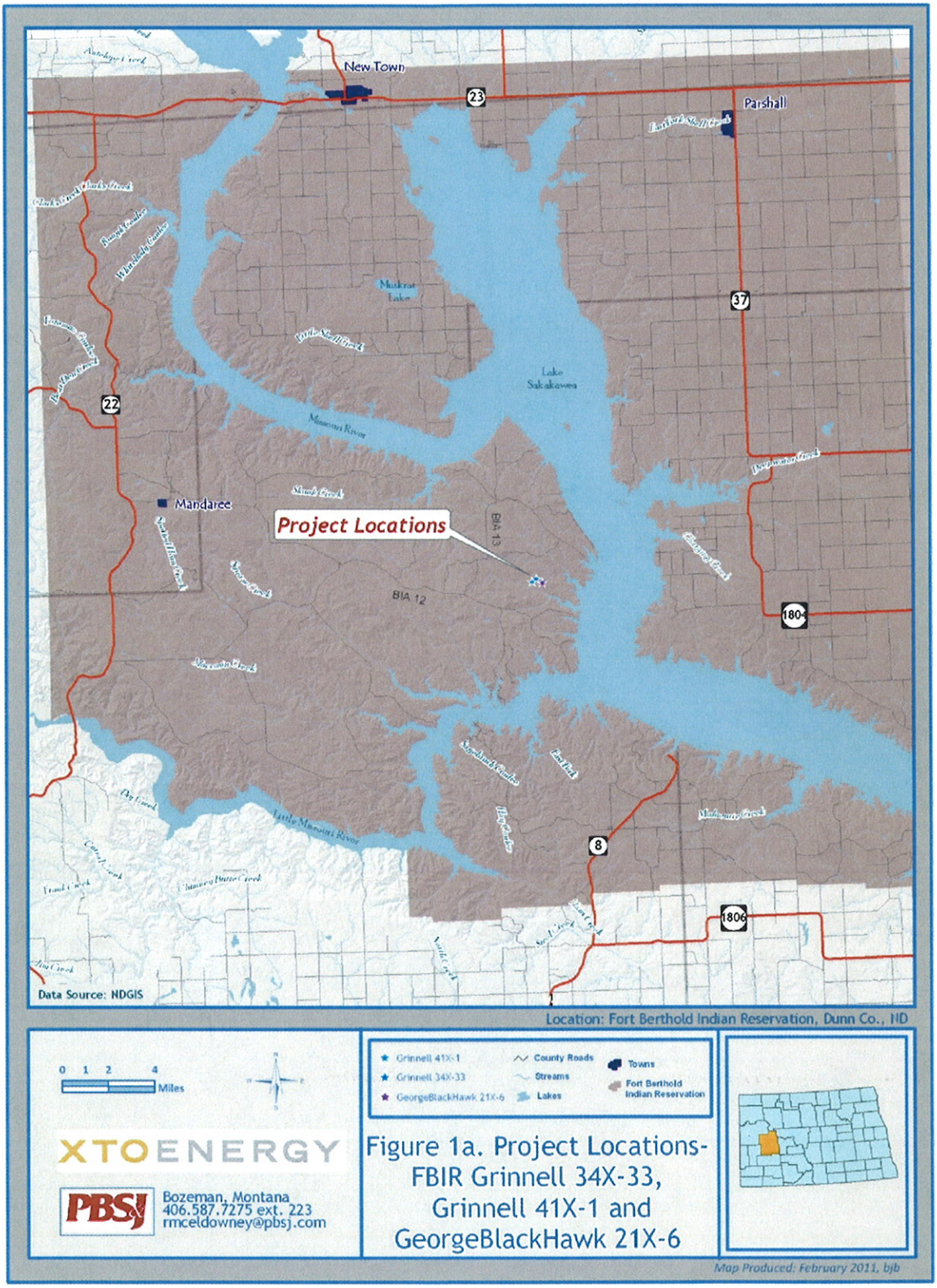
XTO Energy: Grinnell 41X-1, Grinnell 34x-33 and GeorgeBlackHawk 21X-6

The Bureau of Indian Affairs (BIA) is planning to issue administrative approvals related to installation of three oil/gas well pads and related infrastructure as shown on the attached map. Construction by XTO Energy is expected to begin in the summer of 2011.

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 Earl Silk, 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 July 17, 2011 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 location.