



# United States Department of the Interior

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



SEP 15 2009

IN REPLY REFER TO:  
DESCRM  
MC-208

## MEMORANDUM

TO: Superintendent, Ft. Berthold Agency

FROM: Regional Director, Great Plains Regional Office 

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 four proposed exploratory drilling wells by Zenergy on *Dakota-3 Mandan #3-13H, Dakota-3 Brugh #15-32H, Dakota-3 TAT (694A) #3-11H, Dakota-3 Clara #14-17H* on the Fort Berthold Reservation, an Environmental Assessment (EA) has been completed and a Finding of No Significant Impact (FONSI) has been issued.

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

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

Attachment

cc: Marcus Levings, Chairman, Three Affiliated Tribes (with attachment)

# **ENVIRONMENTAL ASSESSMENT**

**United States Bureau of Indian Affairs**

**Great Plains Regional Office  
Aberdeen, South Dakota**



**Zenergy Operating Company, LLC**

**Four Bakken Formation Exploratory Oil Wells:**

**Dakota-3 Mandan #3-13H**

**Dakota-3 Brugh #15-32H**

**Dakota-3 TAT (694A) #3-11H**

**Dakota-3 Clara #14-17H**

**Fort Berthold Indian Reservation**

**September 2009**

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

September 2009.

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**Finding of No Significant Impact**  
**Zenergy Operating Company, LLC**

**Four Bakken Exploratory Oil Wells:**  
**Dakota-3 Mandan #3-13H**  
**Dakota-3 Brugh #15-32H**  
**Dakota-3 TAT (694A) #3-11H**  
**Dakota-3 Clara #14-17H**

**Fort Berthold Indian Reservation**  
**Mountrail, Dunn, and McKenzie Counties North Dakota**

The U.S. Bureau of Indian Affairs (BIA) has received a proposal for four oil/gas wells, access roads and related infrastructure on the Fort Berthold Indian Reservation to be located in NE¼ NW¼ of Section 13, Township 150 North, Range 93 West, SW¼ SE¼ of Section 32, Township 149 North, Range 94 West, NE¼ NW¼ of Section 11, Township 149 North, Range 94 West, and SE¼ SW¼ of Section 17, Township 149 North, Range 93 West. Associated federal actions by BIA include determinations of effect regarding cultural resources, approvals of leases, rights-of-way and easements, and a positive recommendation to the Bureau of Land Management regarding the Applications for Permit to Drill.

Potential of the proposed actions to impact the human environment is analyzed in the attached Environmental Assessment (EA), as required by the National Environmental Policy Act. Based on the recently completed EA, I have determined that the proposed 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.
4. The proposed actions are designed to avoid adverse effects to historic, archaeological, cultural and traditional properties, sites and practices. Compliance with the procedures of the National Historic Preservation Act is complete.
5. Environmental justice was fully considered.
6. Cumulative effects to the environment are either mitigated or minimal.
7. No regulatory requirements have been waived or require compensatory mitigation measures.
8. The proposed projects will improve the socio-economic condition of the affected Indian community.

  
Regional Director

9/14/09  
Date

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## 1. Purpose and Need for the Proposed Action

Zenergy Operating Company, LLC (Zenergy) is proposing to drill four exploratory oil and gas wells on the Fort Berthold Indian Reservation (Reservation) to evaluate, and possibly develop, the commercial potential of natural resources. Developments have been proposed on land held in trust by the United States in Dunn, McKenzie, and Mountrail counties, North Dakota. The U.S. Bureau of Indian Affairs (BIA) is the surface management agency for potentially affected tribal lands and individual allotments. The BIA manages lands held in title by the tribe and tribal members to subsurface mineral rights. As shown in Figure 1, developments have been proposed in the following locations:

- Dakota-3 Mandan #3-13H: NE $\frac{1}{4}$  NW $\frac{1}{4}$  of Section 13, Township 150 North, Range 93 West
- Dakota-3 Brugh #15-32H: SW $\frac{1}{4}$  SE $\frac{1}{4}$  of Section 32, Township 149 North, Range 94 West
- Dakota-3 TAT (694A) #3-11H: NE $\frac{1}{4}$  NW $\frac{1}{4}$  of Section 11, Township 149 North, Range 94 West
- Dakota-3 Clara #14-17H: SE $\frac{1}{4}$  SW $\frac{1}{4}$  of Section 17, Township 149 North, Range 93 West

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

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

There are several components to each of the proposed actions. Both new and improved roads are needed to access proposed well sites. Well pads would be constructed to accommodate drilling operations. Pits for drill cuttings would be constructed, used and reclaimed. Drilling and completion information could result in long-term commercial production at some or all of the sites, in which case supporting facilities would be installed. The working portions of well pads and the access roads would remain in place during commercial production. All project components would eventually be abandoned and reclaimed, as specified in this document and the APDs and according to any other federal conditions, unless formally transferred with federal approval to either the BIA or the landowner. The proposed wells are exploratory, in that results could also support developmental decisions on other leases in the surrounding area, but this EA addresses only the installation and possible long-term operation of the listed wells and directly associated infrastructure and facilities. Additional NEPA analysis, decisions and federal actions will be required prior to any other development.

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

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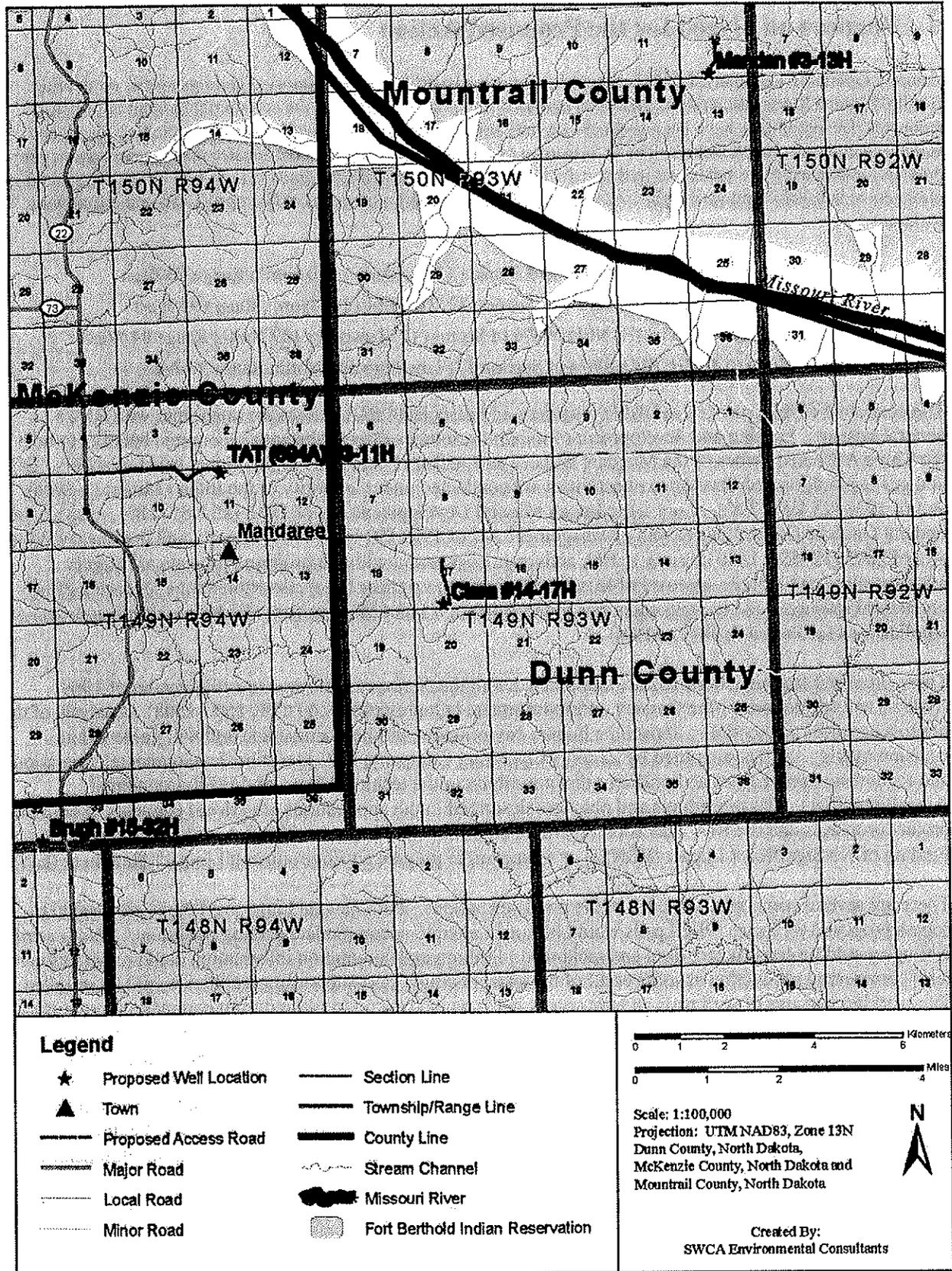


Figure 1: Project locations.

## 2.0 Proposed Action and Alternatives

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

This document analyzes the impacts of specific projects—four exploratory oil and gas wells with varied surface and mineral estates (Table 2.0). The proposed well locations are in the west-central portions of the Reservation in Dunn, McKenzie, and Mountrail counties. The Mandaree Indian community is approximately 9.30 miles southwest and New Town is approximately 11.38 miles northeast of the proposed Dakota-3 Mandan #3-13H well. The Mandaree Indian community is approximately 4.70 miles north and New Town is approximately 24.15 miles northeast of the proposed Dakota-3 Brugh #15-32H well. The Mandaree Indian community is approximately 1.07 miles south and New Town is approximately 18.60 miles northeast of the proposed Dakota-3 TAT (694A) #3-11H well. The Mandaree Indian community is approximately 3.08 miles west and New Town is approximately 19.15 miles north of the proposed Dakota-3 Clara #14-17H well. The proposed wells would test the commercial potential of the Middle Bakken Dolomite Member of the Bakken Formation.

**Table 2 Surface and mineral ownership of the exploratory well sites.**

Proposed Well	Surface Owner	Mineral Owner
Mandan #3-13H	Three Affiliated Tribes	Tribal & Allotted
Brugh #15-32H	Heirs of Allotment	Allotted
TAT (694A) #3-11H	Three Affiliated Tribes	Allotted
Clara #14-17H	Heirs of Allotment	Allotted

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

### 2.1 Field Camps

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

### 2.2 Access Roads

Up to 11,576.51 feet (2.19 miles) of new access roads would be constructed and 4,260 feet (0.81 mile) of road to the four proposed well locations would be upgraded or improved. Signed agreements would be in place allowing road construction across affected surface allotments and private land surfaces, and any applicable approach permits and/or easements would be obtained prior to any construction activity. A maximum

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disturbed right-of-way (ROW) width of 50 feet for each access road would result in up to 13.29 acres of new surface disturbance. Zenergy would reclaim the disturbance back to approximately 20 feet.

Construction would follow road design standards outlined in the Bureau of Land Management (BLM) guidebook *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (U.S. Department of the Interior and U.S. Department of Agriculture 2007). Care would be taken during road construction to avoid disturbing or disrupting any buried utilities that may exist along 28<sup>th</sup> Street NW, Highway 22, BIA 12, and BIA 30. Details of road construction are addressed in the Application for the Permit to Drill (APD).

### 2.3 Well Pads

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

The level area of the well pads used for drilling and completion operations (including a reserve pit for drilled cuttings) would be approximately 430 by 330 feet (3.3 acres per well pad). Cut and fill slopes and stockpiled topsoil and reserve pit backfill on the edge of pads would result in approximately 0.4 acre of additional surface disturbance. The total surface disturbance for each well pad would be approximately 3.7 acres and would total approximately 14.8 acres for all of the well pads together. Details of pad construction and reclamation are diagrammed in each APD.

### 2.4 Drilling

After securing mineral leases, Zenergy submitted the APDs to the BLM on July 9, 2009.

The Middle Bakken drilling targets for the four proposed wells are as follows with summary provided in Table 2.4:

- Mandan #3-13H: 500 feet from north line (FNL) and 2,090 feet from west line (FWL) in the SW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> of Section 13, Township 150 North, Range 93 West; approximately 5,980 feet from the surface hole location.
- Brugh #15-32H: 500 feet from south line (FSL) and 2,090 feet from east line (FEL) in the NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> of Section 32, Township 149 North, Range 94 West; approximately 4,662 feet from the surface hole location.
- TAT (694A) #3-11H: 500 feet FNL and 2,090 feet FWL in the SW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> of Section 11, Township 149 North, Range 94 West; approximately 4,557 feet from the surface hole location.
- Clara #14-17H: 500 feet FSL and 2,090 feet FWL in the NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> of Section 17, Township 149 North, Range 93 West; approximately 4,676 feet from the surface hole location.

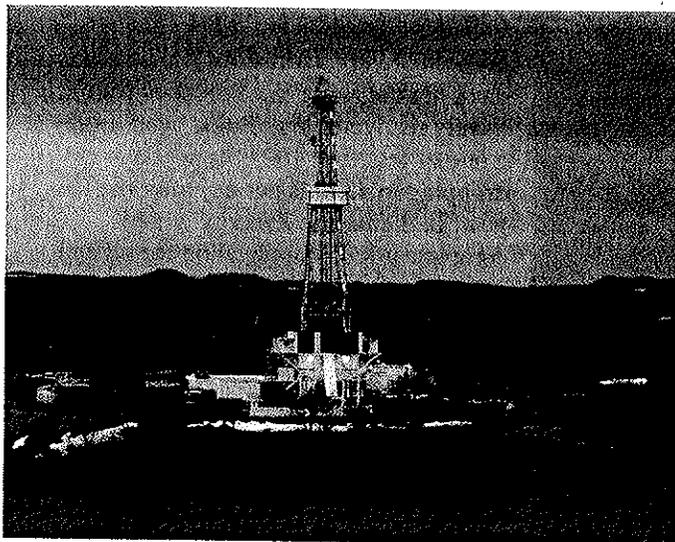
The BLM North Dakota Field Office forwarded copies of the APDs to BIA's Fort Berthold Agency in New Town, North Dakota, for review and concurrence. BLM will not approve an APD until BIA completes its NEPA process and recommends APD approval. No drilling will begin until an approved permit has been obtained from the BLM.

**Table 2.4 Drilling information for the Middle Bakken Formation exploratory wells.**

Purposed Well	Initial Vertical Depth (feet)	Setback minimum achieved by directional drilling (feet)	Depth (vertical) at which drilling would become roughly horizontal (feet)	Depth (measured) at which drilling would become roughly horizontal (feet)	Completed drill string measured depth (feet)
Mandan #3-13H	10,360	500	9,860	10,860	13,900
Brugh #15-32H	10,970	500	10,470	11,470	14,975
TAT (694A) #3-11H	10,970	500	10,470	11,470	14,975
Clara #14-17H	10,900	500	10,400	11,400	14,575

Rig transport and on-site assembly would take roughly seven days for each well. Drilling would require approximately 35 days to reach target depth, using a rotary drilling rig rated for drilling to approximately 15,000 feet. For the first 2,500 feet drilled, a freshwater-based mud system with non-hazardous additives would be used to minimize contaminant concerns. Water would be obtained from a commercial source for this drilling stage, using approximately 8.4 gallons of water per foot drilled. A typical drilling rig is presented in Figure 2.4.

After setting and cementing the near-surface casing, an oil-based mud system (80% to 85% diesel fuel and 15% to 20% water) would be used to drill to the 7-inch casing point. Oil-based drilling fluids reduce the potential for hole sloughing while drilling through water-sensitive formations (shales). Approximately 4,725 gallons of water and 18,900 gallons of diesel fuel per well would be used to complete vertical drilling. The lateral reach of the borehole would be drilled using 33,600 gallons of fresh water as mud and adding polymer sweeps as necessary to clean the hole. On the surface, toxic fluids would be contained in steel tanks placed on plastic/vinyl liners, then collected during drilling by centrifuging returns to separate the cuttings from fluids. Fluids would be recycled back into the steel tanks for re-use. Upon completion of drilling operations at each location, oil-based fluids would be collected to the extent possible and recycled for use elsewhere. Any free fluids remaining in the reserve pits would be removed and disposed of in accordance with North Dakota Industrial Commission (NDIC) rules and regulations.



Cuttings generated from drilling would be deposited in the reserve pit on each individual well pad. Reserve pits would be lined with an impervious (plastic/vinyl) liner to prevent drilling fluid seepage and contamination of the underlying soil. Liners would be installed over sufficient bedding (either straw or dirt) to cover any rocks, would overlap the pit walls, extend under the mud tanks, and would be covered with dirt and/or rocks to hold it in place. Prior to use, the entire location would be fenced completely with a cattle guard at the access road into location, in order to protect both wildlife and livestock. Fencing would be installed in accordance with Gold Book guidelines and maintained until the reserve pits are backfilled.

**Figure 2.4: Typical drilling rig**

## 2.5 Casing and Cementing

Surface casing would be set at an approximate depth of 2,500 feet and cemented back to the surface during drilling, isolating all near-surface freshwater aquifers in the project area. (The Fox Hills Formation is approximately 1,700 feet and the Pierre Formation is roughly 1,800 feet.) The Dakota Formation potentially contains a hydrocarbon zone expected at a depth of approximately 4,500 feet. Therefore, a production casing would be set and cemented from 11,256 feet up to approximately 4,000 feet. (This range is from the start of the lateral Bakken up to Dakota Sand at roughly 4,000 feet.) Casing and cementing operations would be conducted in full compliance with *Onshore Oil and Gas Order 2* (Title 43 Code of Federal Regulations 3160).

## 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 depth proposed, about thirty (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 a mixture of sand and a carrier (e.g., water and/or nitrogen) under extreme pressure downhole. The resulting fractures are propped open by the sand, increasing the capture zone of the well and maximizing efficient drainage of the field. After fracturing, the well is typically flowed back to the surface to recover fracture fluids and remove excess sand. Fluids utilized in the completion procedure would be captured either in the reserve pit or 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 any of the four proposed locations, additional equipment would be installed, including a pumping unit at the well head, a vertical heater/treater, tanks, and a flare pit. An impervious dike sized to hold 100% of the capacity of the largest tank plus one full day's production would surround production tanks and the heater/treater. Load out lines would be located inside the diked area, with a heavy screen-covered drip barrel installed under the outlet. A metal access staircase would protect the dike and support flexible hoses used by tanker trucks. The BIA would choose an inconspicuous paint color for all permanent aboveground production facilities from colors recommended either by the BLM or the Rocky Mountain Five-State Interagency Committee. A typical producing rig is shown in Figure 2.7 and more detail is included in the APDs.

Initially, 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 on volumes and rates of production. Zenergy anticipates the proposed wells would produce approximately 500 barrels (bbls) of oil per day,

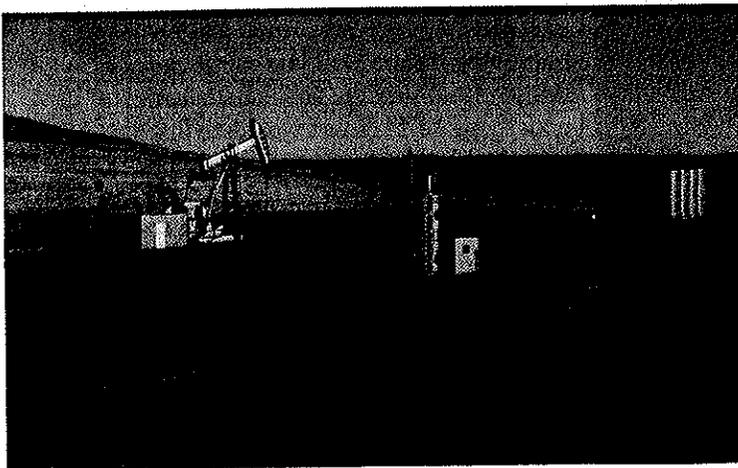


Figure 2.7: Typical commercial operation

dropping to approximately 300 bbls per day after the first year. Produced water, mostly recovered frac fluids, would flow at a rate of less than 100 bbls per day, dropping to 45 bbls per day after the first year. In the future, Zenergy would complete a ROW application for oil and water pipelines and for an electric line, all of which would be located within existing disturbance along access and arterial roads.

Large volumes of gas are not expected from these locations. Small volumes would be flared in accordance with the Notice to Lessees (NTL) 4A and NDIC regulations, which prohibit unrestricted

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

## **2.8 Reclamation**

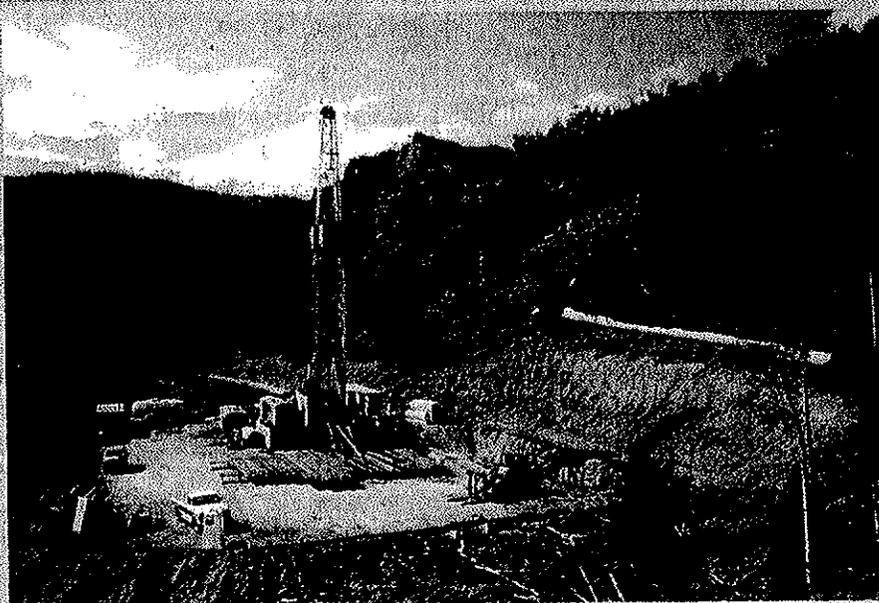
The reserve pit and drill cuttings would be treated, solidified, backfilled and buried as soon as possible after well completion. Any oily residue is dispersed and captured, preventing coalescence and release to the environment at significant rates in the future. Controlled mixing of cuttings with a non-toxic reagent causes an irreversible reaction that quickly results in an inert, solid material. The alkaline nature of the stabilized material also chemically stabilizes various metals that may be present, primarily by transforming them into less soluble compounds. Treated material would then be buried in the reserve pit, overlain by at least four feet of overburden as required by NDIC regulations.

If commercial production equipment is installed, the well pad would be reduced in size to about 300' x 200', with the rest of the original pad reclaimed. The working area of each well pad and the running surface of access roads would be surfaced with scoria or crushed rock obtained from a previously approved location. Other interim reclamation measures to be accomplished within the first year include reduction of the cut and fill slopes, redistribution of stockpiled topsoil, installation of erosion control measures, and reseeded. The back slope portions of roads would be covered with stockpiled topsoil and re-seeded with a seed mixture determined by the BIA, reducing the residual access-related disturbance to about 28' wide.

Final reclamation would occur either in the very short term if the proposed well is commercially unproductive, or later upon final abandonment of commercial operations. All disturbed areas would be reclaimed, reflecting the BIA view of oil and gas exploration and production as temporary intrusions on the landscape. All facilities would be removed, well bores would be plugged with cement and dry hole markers would be set. Access roads and work areas would be leveled or backfilled as necessary, scarified, re-contoured and re-seeded. Exceptions to these reclamation measures might occur if the BIA approves assignment of an access road either to the BIA roads inventory or to concurring surface allottees. The Surface Use Plan within each APD contains additional details regarding both interim and final reclamation measures. Figure 2.8 shows an example of reclamation from the Gold Book.

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Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development



The well pad and access road are constructed to the minimum size necessary to safely conduct drilling and completion operations.



The well pad and access road have been recontoured back to the original contour, the topsoil respread, and the site revegetated.

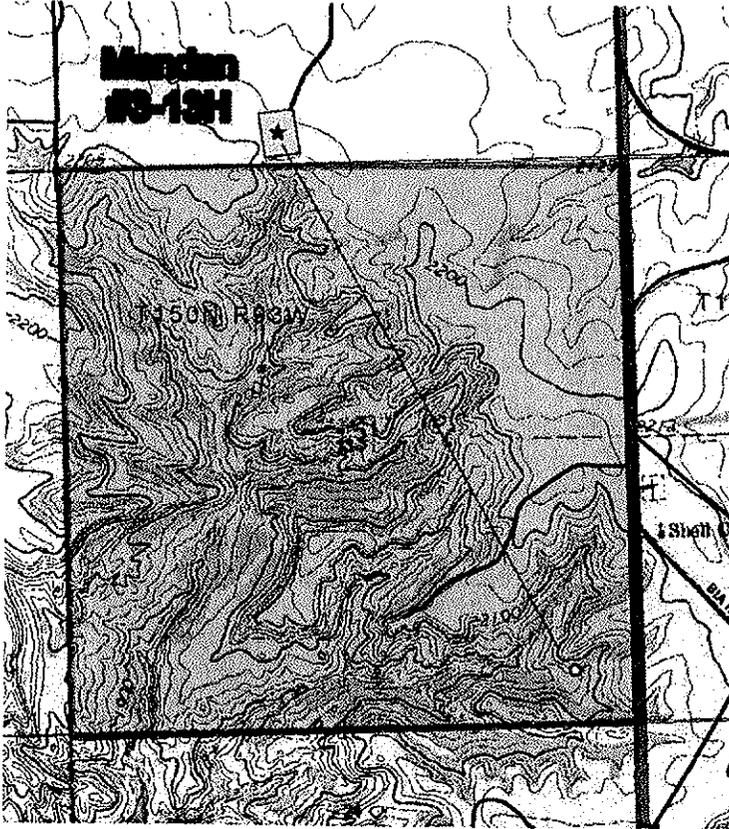
Figure 2.8: Example of reclamation from the Gold Book

## 2.9 Construction Details at Individual Sites

One wellbore will be drilled from each of the four surface locations.

### Mandan #3-13H

The proposed Mandan #3-13H well would be located in the NE $\frac{1}{4}$  NW $\frac{1}{4}$  of Section 13, Township 150 North,



Range 93 West in Mountrail County and would access a 640-acre spacing unit that would include all of Section 13. A new road approximately 643.74 feet long would have to be constructed from the existing access to the proposed well location. A map of the proposed access road is provided as Figure 2.9d and a map of the proposed drilling target and spacing unit is shown in Figure 2.9a. Photographs of the proposed access road and well location are provided as Figures 2.9b and 2.9c. Vertical drilling would be completed at approximately 10,360 feet, at which point drilling would turn roughly horizontal to an approximate total vertical depth (TVD) of 10,860 feet. The total drill string would be at approximately 13,900 feet at the TVD, including approximately 4,500 feet of lateral reach into the Middle Bakken Formation, terminating at the bottom hole location in the SW $\frac{1}{4}$  SE $\frac{1}{4}$  of Section 13.

Figure 2.9a: Topographic Map, showing spacing units

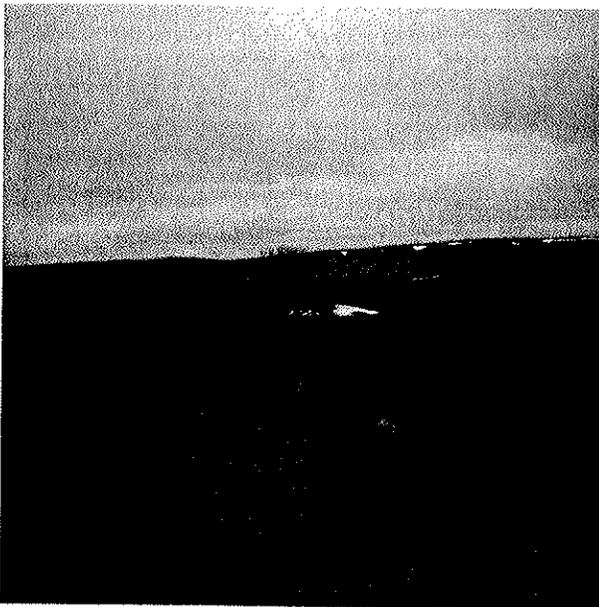


Figure 2.9b: Mandan#3-13H, access road

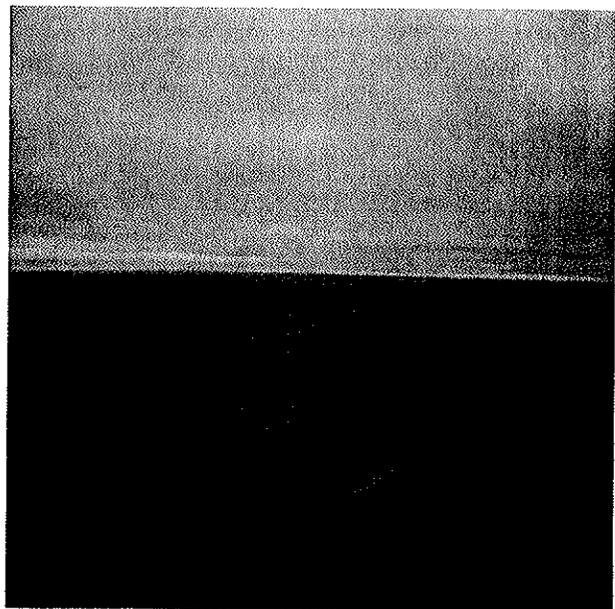


Figure 2.9c: Mandan#3-13H, well pad

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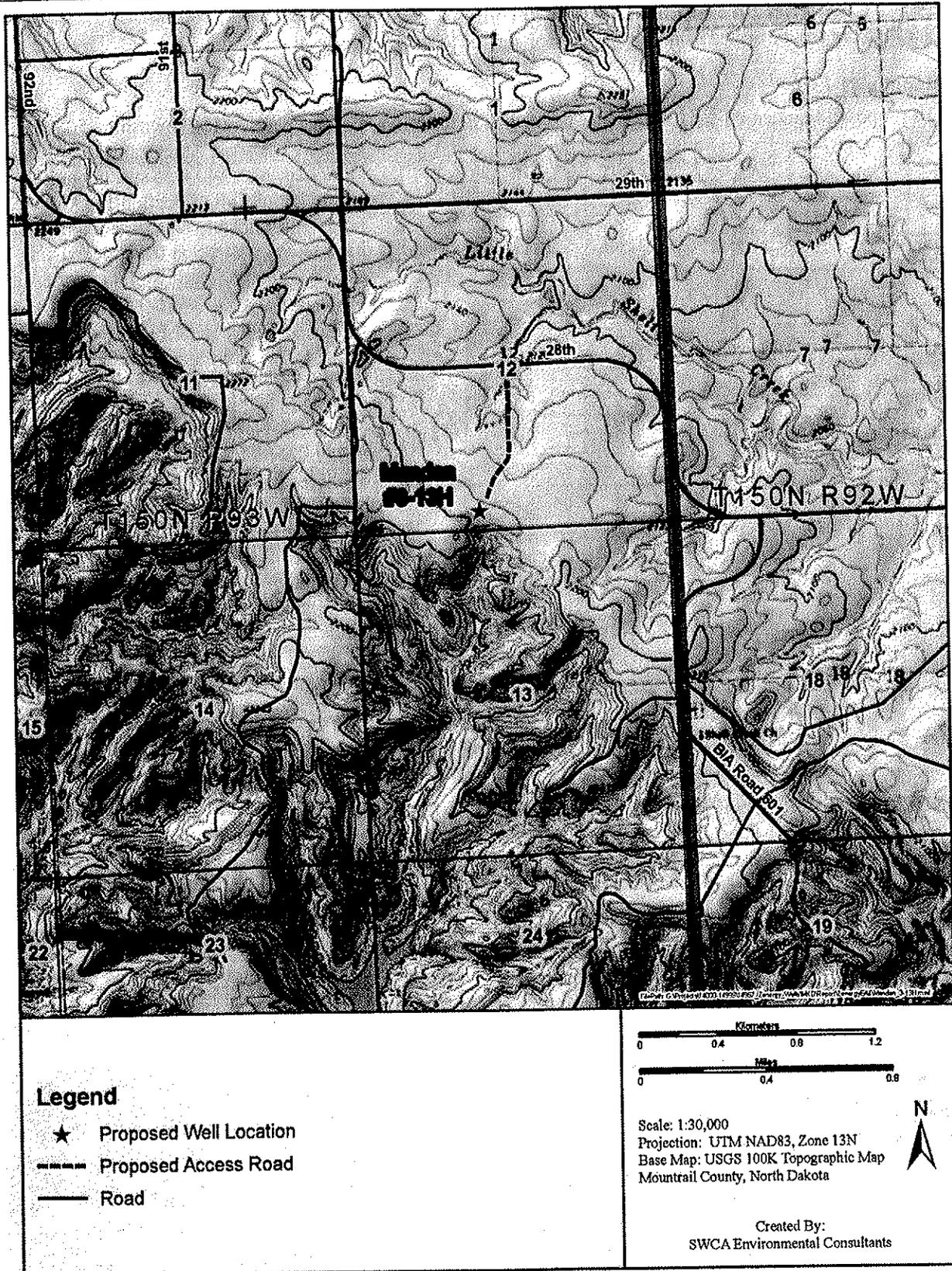


Figure 2.9d: Mandan #3-13H project map

**Brugh #15-32H**

The proposed Brugh #15-32H well would be located in the SW¼ SE¼ of Section 32, Township 149 North, Range 94 West in McKenzie County and would access a 640-acre spacing unit that would include all of Section 32. A new road approximately 173 feet long would have to be constructed from the existing access to the proposed well location. A map of the proposed access road is provided in Figure 2.9h and a map of the proposed drilling target and spacing unit is shown in Figure 2.9e. Photographs of the proposed access road and well location are provided as Figures 2.9f and 2.9g. Vertical drilling would be completed at approximately 10,970 feet, at which point drilling would turn roughly horizontal to an approximate TVD of 11,470 feet. The drill string would total approximately 14,975 feet at the TVD, including approximately 4,400 feet of lateral reach into the Middle Bakken Formation, terminating at the bottom hole location in the NE¼ NW¼ of Section 32.

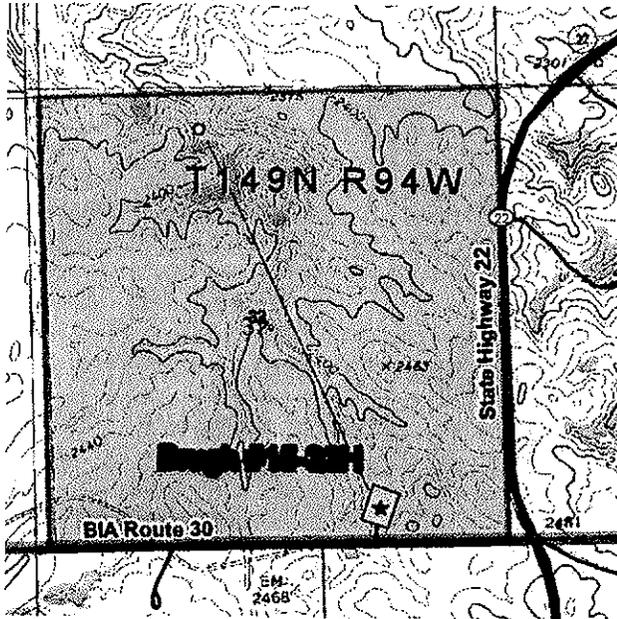


Figure 2.9e: Topographic Map of Brugh #15-32H, showing spacing units

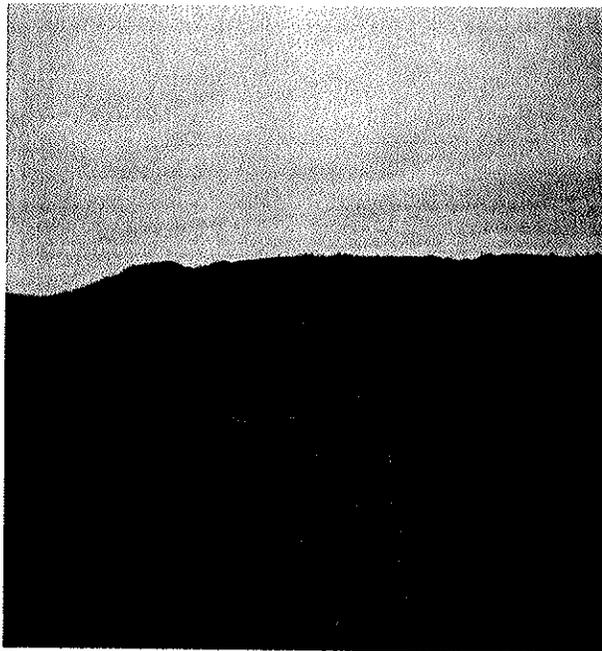


Figure 2.9f: Brugh #15-32H access road

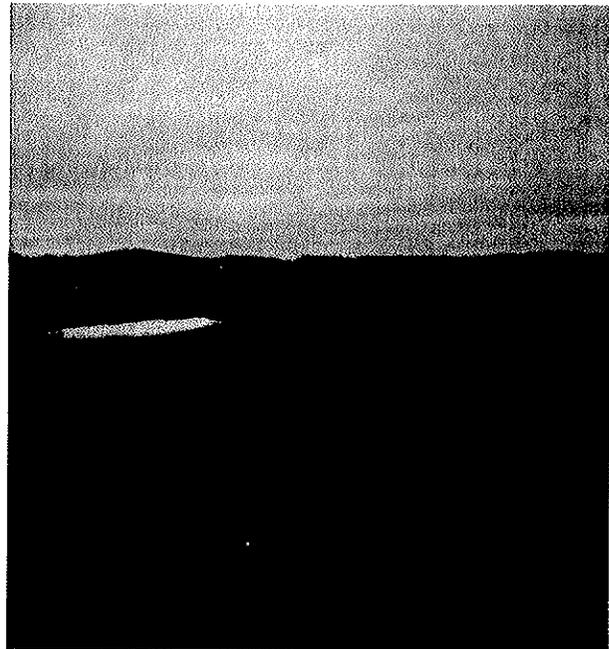


Figure 2.9g: Brugh #15-32H well pad

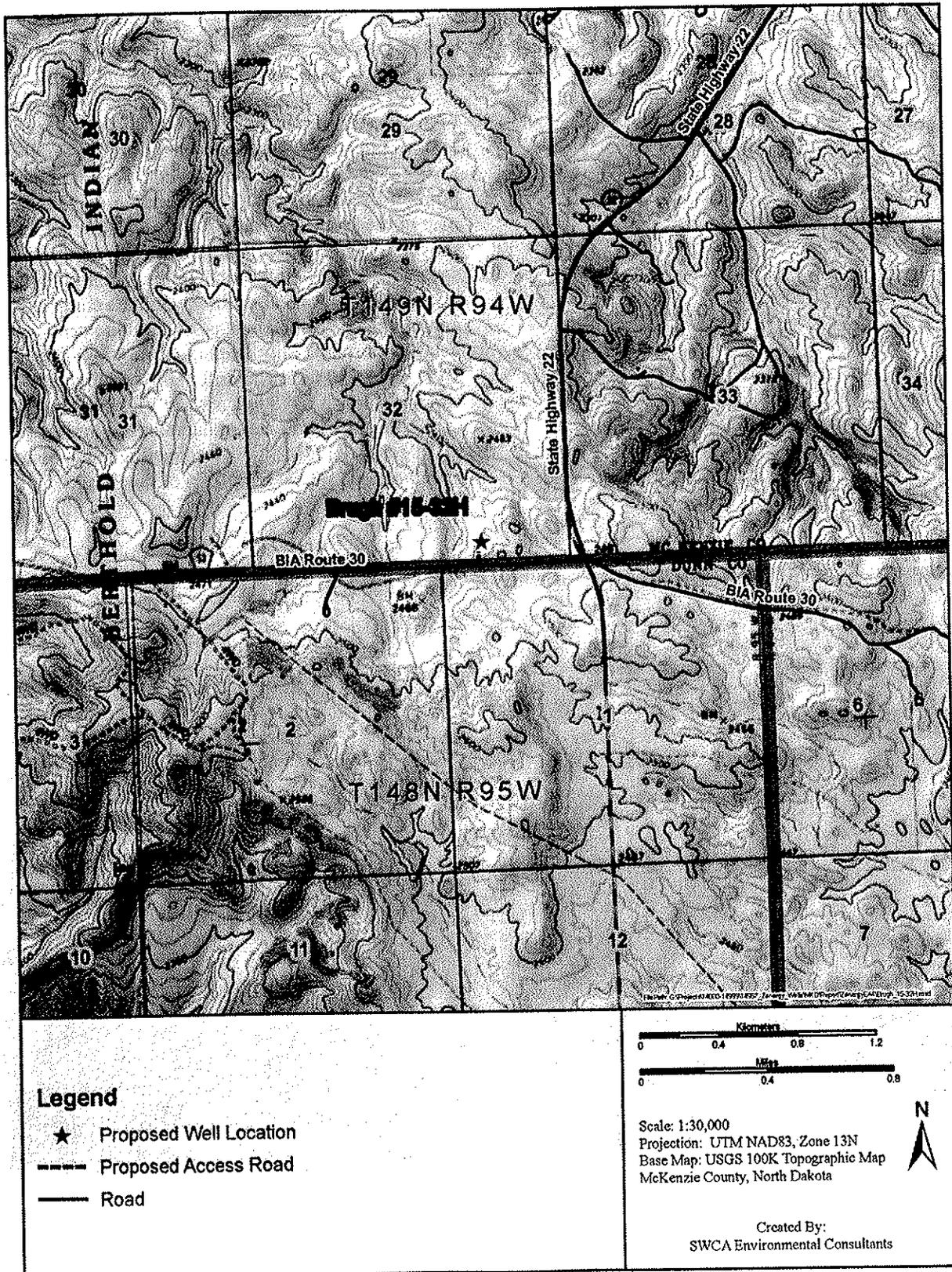


Figure 2.9h: Brugh #15-32H project map

### TAT (694A) #3-11H

The proposed TAT (694A) #3-11H well would be located in the NE¼ NW¼ of Section 11, Township 149 North, Range 94 West in McKenzie County and would access a 640-acre spacing unit that would include all of Section 11. A new road approximately 10,609.77 feet long would have to be constructed from the existing access to the proposed well location. This newly constructed proposed road will continue on from a previously submitted well location (Dakota-3 Benson #16-3H). A map of the proposed access road is provided as Figure 2.9i and a map of the proposed drilling target and spacing unit is shown in Figure 2.9i. Photographs of the proposed access road and well location are provided as Figures 2.9j and 2.9k. Vertical drilling would be completed at approximately 10,970 feet, at which point drilling would turn roughly horizontal to an approximate TVD of 11,470 feet. The drill string would total approximately 14,975 feet at the TVD, including approximately 4,400 feet of lateral reach into the Middle Bakken Formation, terminating at the bottom hole location in the SW¼ SE¼ of Section 11.

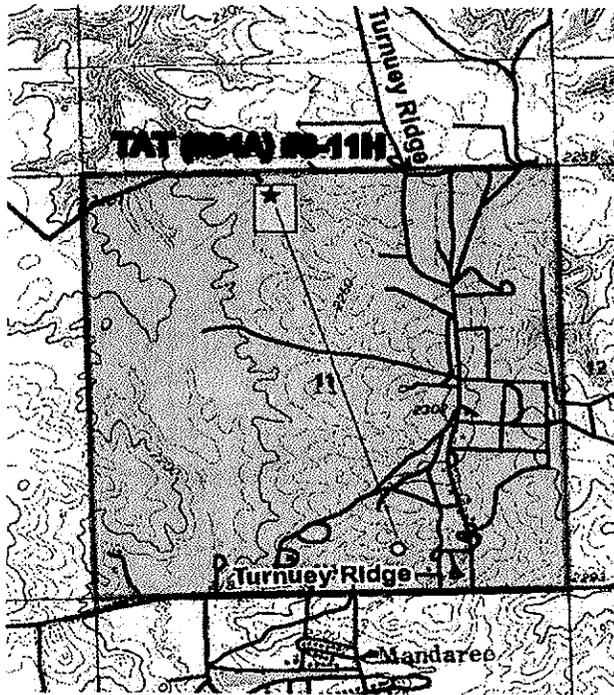


Figure 2.9i: Topographic Map of TAT #3-11H, showing spacing units

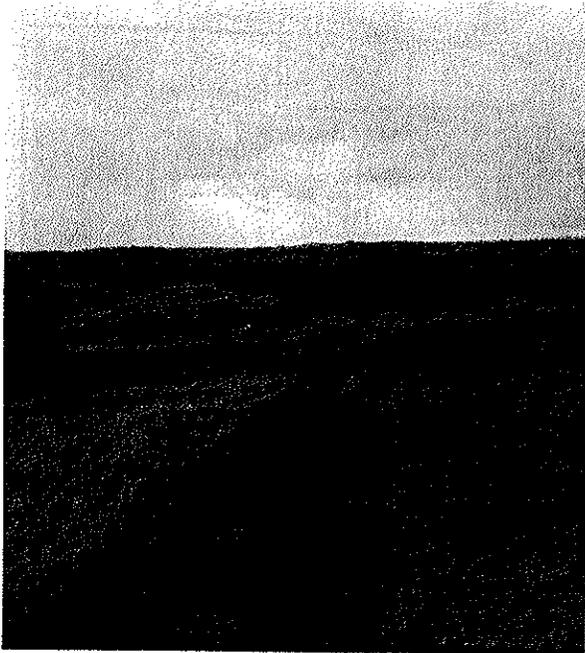


Figure 2.9j: TAT #3-11H access road

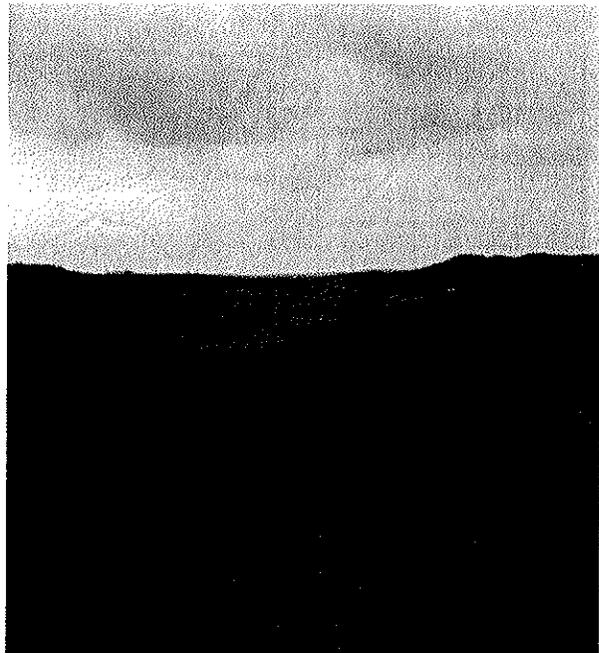


Figure 2.9k: TAT #3-11H well pad

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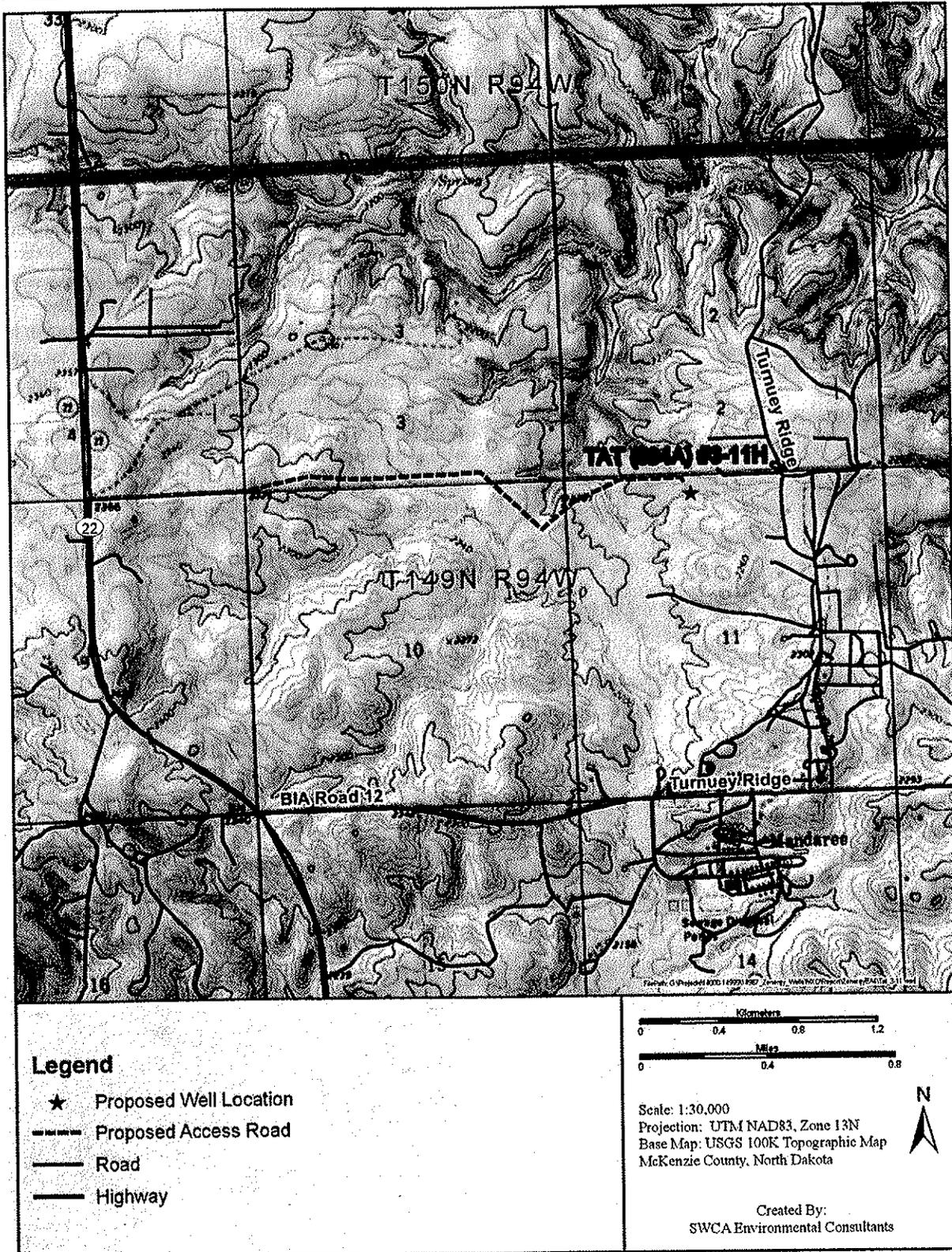


Figure 2.9I: TAT #3-11H project map

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### Clara #14-17H

The proposed Clara #14-17H well would be located in the SE¼ SW¼ of Section 17, Township 149 North, Range 93 West in Dunn County and would access a 320-acre spacing unit that would include the west half of Section 17. A new road approximately 150 feet long would have to be constructed from a previously permitted access road (Dakota-3 Clark Fox #15-17H). A map of the proposed access road is provided as Figure 2.9p and a map of the proposed drilling target and spacing unit is shown in Figure 2.9m. Photographs of the proposed access road and well location are provided as Figures 2.9n and 2.9o. Vertical drilling would be completed at approximately 10,900 feet, at which point drilling would turn roughly horizontal to an approximate TVD of 11,400 feet. The drill string would total approximately 14,575 feet at the TVD, including approximately 4,400 feet of lateral reach into the Middle Bakken Formation, terminating at the bottom hole location in the NW¼ NW¼ of Section 17.

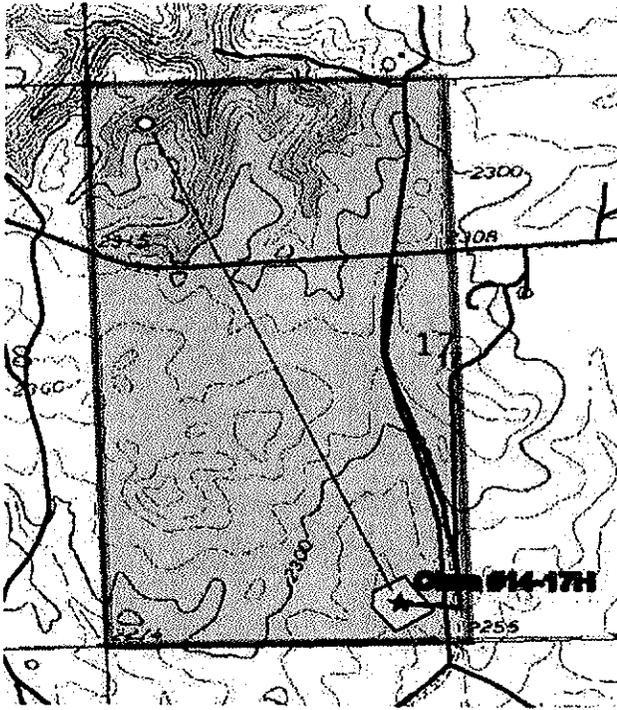


Figure 2.9m: Topographic Map of Clara #14-17H, showing spacing units

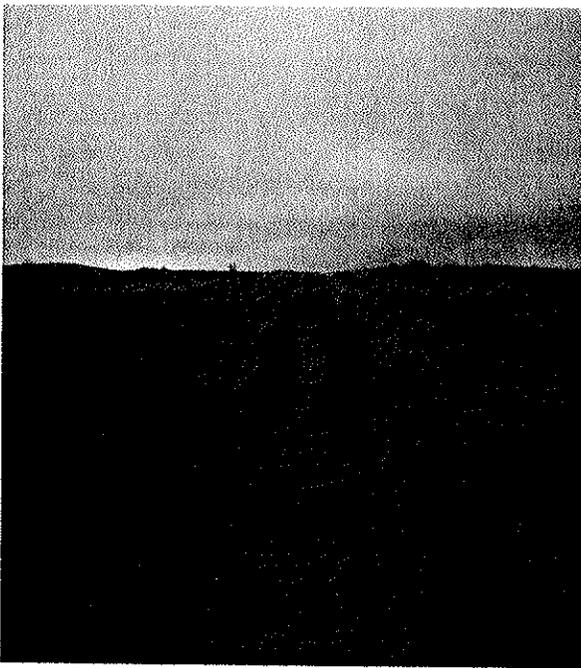


Figure 2.9n: Clara #14-17H access road

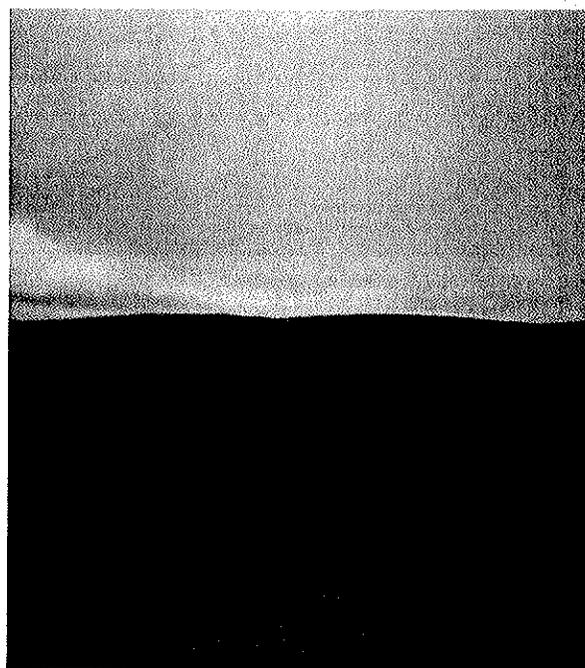


Figure 2.9o: Clara #14-17H well pad

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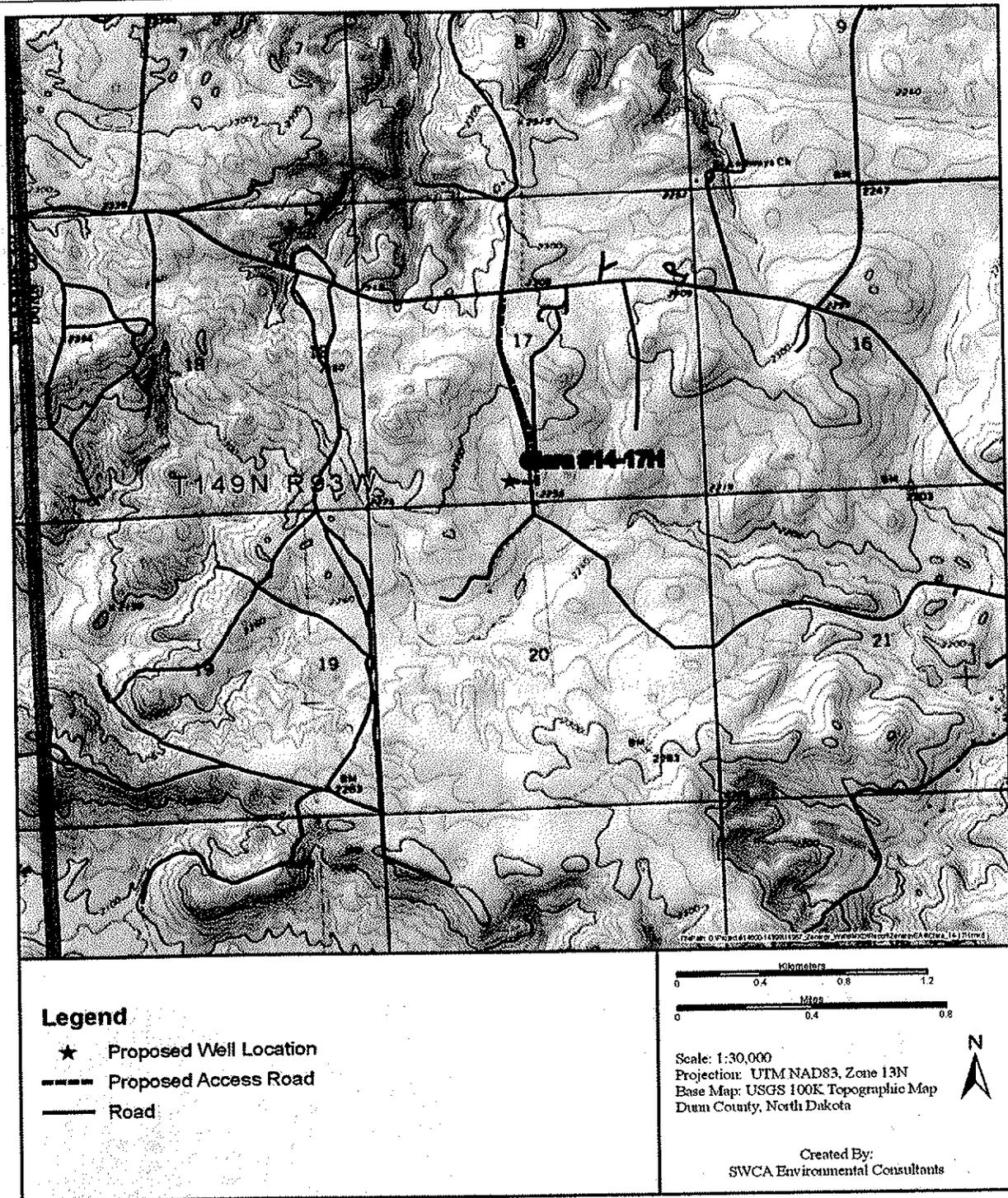


Figure 2.9p: Clara #14-17H project map

### 2.10 Preferred Alternative

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

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### 3. The Affected Environment and Potential Impacts

The Fort Berthold Indian Reservation is the home of the Three Affiliated Tribes of the MHA Nation. Located in west-central North Dakota, the Reservation encompasses more than one 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 is owned in fee simple title, sometimes by the MHA Nation or tribal members, but usually by non-Indians. The Reservation occupies portions of six counties, including Dunn, McKenzie, McLean, Mercer, Mountrail and Ward. In 1945, the Garrison Dam was completed, inundating much of the Reservation. The remaining land was divided into three sections by Lake Sakakawea, an impoundment of the Missouri River upstream of the Garrison Dam.

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

The Reservation is within the northern Great Plains ecoregion, which consists of four physiographic units: 1) the Missouri Coteau Slope north of Lake Sakakawea; 2) the Missouri River trench (the part not flooded); 3) the Little Missouri River badlands; and 4) the Missouri Plateau south and west of Lake Sakakawea (Williams and Bluemle 1978). Much of the Reservation is on the Missouri Coteau Slope. Elevations of the formerly glaciated, gently rolling landscape ranges from a normal pool elevation of 1,838 feet at Lake Sakakawea to over 2,600 feet on Phaelan's Butte near Mandaree. Annual precipitation on the plateau averages between 15 and 17 inches. Mean temperatures fluctuate between -3° and 21° F in January and between 55° and 83° F in July, with 95 to 130 frost-free days each year (Bryce et al. 1998; High Plains Regional Climate Center 2008).

The proposed well sites and spacing units are in a rural area consisting of grassland and shrubland that is currently either idle or used to graze livestock. The landscape has been previously disturbed by dirt trails and graveled and paved roadways. Existing conditions within the proposed drilling units are described below. The broad definition of the human and natural 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, soils, vegetation and invasive species, cultural resources, socioeconomic conditions, and environmental justice. Potential impacts to these elements are analyzed for both the No Action Alternative and the Preferred Alternative. Impacts may be beneficial or detrimental, direct or indirect, and short-term or long-term. This 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 EIS.

#### 3.1 The No Action Alternative

Under the No Action Alternative, the proposed projects 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/riparian habitat, threatened and endangered species, soils, vegetation and invasive species, cultural resources, and environmental justice. 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 biological material, trucking, and other traffic would not change from present levels. Under the No Action Alternative, the MHA Nation, Tribal members, and allottees would not have the opportunity to realize potential financial gains resulting from the discovery of resources at these well locations.

### 3.2 Air Quality

The North Dakota Department of Health (NDDH) network of Ambient Air Quality Monitoring (AAQM) stations includes Watford City in McKenzie County, Dunn Center in Dunn County, and Beulah in Mercer County. These stations are located west, south and southeast of the proposed well sites. Criteria pollutants tracked under National Ambient Air Quality Standards (NAAQS) of the Clean Air Act include sulfur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>10</sub>), nitrogen dioxide (NO<sub>2</sub>) and ozone (O<sub>3</sub>). Two other criteria pollutants – lead (Pb) and carbon monoxide (CO) – are not monitored by any of three stations. Table 3.2 summarizes federal air quality standards and available air quality data from the three-county study area.

Table 3.2: Air quality standards and data for Dunn, McKenzie, and Mercer Counties, North Dakota

Pollutant	Averaging Period	NAAQS (µg/m <sup>3</sup> )	NAAQS (ppm)	County		
				Dunn	McKenzie	Mercer
SO <sub>2</sub>	24-Hour	365	0.14	0.004 ppm	0.004 ppm	0.011 ppm
	Annual Mean	80	0.030	0.001 ppm	0.001 ppm	0.002 ppm
PM <sub>10</sub>	24-Hour	150	--	50 (µg/m <sup>3</sup> )	35 (µg/m <sup>3</sup> )	35 (µg/m <sup>3</sup> )
	Annual Mean	50	--	--	--	--
PM <sub>2.5</sub>	24-Hour	35	--	--	--	--
	Weighted Annual Mean	15	--	--	--	--
NO <sub>2</sub>	Annual Mean	100	0.053	0.002 ppm	0.001 ppm	0.003 ppm
CO	1-Hour	40,000	35	--	--	--
	8-Hour	10,000	9	--	--	--
Pb	3-Month	1.5	--	--	--	--
O <sub>3</sub>	1-Hour	240	0.12	0.071 ppm	0.072 ppm	0.076 ppm
	8-Hour	--	0.08	0.061 ppm	0.066 ppm	0.067 ppm

Source: U.S. Environmental Protection Agency (EPA) 2006. µg/m<sup>3</sup> = micrograms per cubic meter. ppm = parts per million.

North Dakota was one of only nine states in 2006 that met standards for all criteria pollutants. The state also met standards for fine particulates and the eight-hour ozone standards established by the U.S. Environmental Protection Agency (EPA) (NDDH 2007). The three counties addressed in Table 3.2 are also in full attainment and usually far below established limits (American Lung Association 2006). The Clean Air Act mandates prevention of significant deterioration in designated attainment areas. Class I areas are of national significance and include national parks greater than 6,000 acres in size, national monuments, national seashores, and federal wilderness areas larger than 5,000 acres and designated prior to 1977. There is a Class I airshed at nearby Theodore Roosevelt National Park, which covers about 110 square miles in three units within the Little Missouri National Grassland between Medora and Watford City, 30-40 miles west of the proposed well sites. The Reservation can be considered a Class II attainment airshed, which affords it a lower level of protection from significant deterioration.

The proposed projects are similar to other projects installed nearby with the approval of state offices. Construction, drilling and tanker traffic would generate temporary, intermittent and nearly undetectable gaseous emissions of particulates, SO<sub>2</sub>, NO<sub>2</sub>, CO, and volatile organic compounds. Road dust would be controlled as necessary and other best management practices implemented as necessary to limit emissions to the immediate project areas (BLM 2005). No detectable or long-term impacts to air quality or visibility are expected within the airsheds of the Reservation, state, or Theodore Roosevelt National Park. No laws, regulations or other requirements have been waived; no monitoring or compensatory measures are required.

### 3.3 Public Health and Safety

Health and safety concerns include naturally-occurring toxic gases, hazardous materials used or generated during installation or production, and hazards posed by heavy truck traffic associated with drilling, completion and production activities. Table 3.3a describes the location of homes nearest to each well site and Table 3.3b details the number of homes within a 5-mile radius of each well.

**Table 3.3a Distance from wells to nearest homes.**

Proposed Well	Feet to Nearest Home	Direction to Nearest Home
Mandan #3-13H	1,700	NE
Brugh #15-32H	2,700	SW
TAT (694A) #3-11H	570	NE
Clara #14-17H	1,900	NE

**Table 3.3b Number of homes within a 5-mile radius of each proposed well.**

Proposed Well	North	East	South	West	Total
Mandan #3-13H	7	14	0	0	21
Brugh #15-32H	106	0	0	2	108
TAT (694A) #3-11H	3	32	131	6	172
Clara #14-17H	5	7	0	151	163

Hydrogen sulfide gas (H<sub>2</sub>S) is extremely toxic in concentrations above 500 parts per million, but it has not been found in measurable quantities in the Bakken Formation. Before reaching the Bakken, however, drilling would penetrate the Mission Canyon Formation, which is known to contain varying concentrations of H<sub>2</sub>S. Release of H<sub>2</sub>S at dangerous concentrations is very unlikely. Contingency plans submitted to BLM comply fully with relevant portions of *Onshore Oil and Gas Order 6* to minimize potential for gas leaks during drilling. Emergency response plans protect both the drilling crew and the general public within one mile of a well; precautions include automated sampling and alarm systems operating continuously at multiple locations

on the well pad. No homes are within ½ mile of any proposed well pad according to 2006 data from the AAQM site at the Dunn Center monitoring site (NDDH 2007). No direct impacts from H<sub>2</sub>S are anticipated.

Negative impacts from construction would be largely temporary. Noise, fugitive dust, and traffic hazards would be present for about sixty days during construction, drilling and well completion, after which they would then diminish sharply during commercial operations. For each of the proposed well sites, it is anticipated that about 50 trips, over the course of several days, would be required to transport the drilling rig and associated equipment to the site, with the same traffic later needed to remove the rig and other temporary facilities.

If any well proves productive, one small truck would travel to the pad each day to check the pump. Gas would be flared initially, while oil and produced water would be hauled out by tankers, with tanker traffic depending directly on productivity. A successful Bakken well usually produces both oil and water at a high rate initially. In the vicinity of the proposed projects, 500-1,000 barrels of oil per day might be expected at first, along with about 200 barrels of water. Over the next several months, daily production might drop to 200-400 barrels of oil and 30-70 barrels of water. An oil tanker can usually haul 140 barrels of oil per load, while water tankers usually hold 110 barrels. Production service might then start at 3-7 oil tankers and two water haulers in and out daily, before declining to 2-3 oil tankers and a single water load. Established load restrictions for state and BIA roadways would be followed and haul permits would be acquired as appropriate. All traffic must be confined to approved routes and conform to speed limits.

The U.S. 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 these projects 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, hazardous materials or traffic. All operations, including flaring, would conform to instructions from BIA fire management staff. Impacts from the proposed projects are considered minimal, unlikely and insignificant. No laws, regulations or other requirements have been waived; no compensatory mitigation measures are required.

### **3.4 Water Resources**

#### Surface Water

The proposed Dakota-3 Mandan #3-13H well would be located in the Little Shell Creek sub-watershed (hydrologic unit code [HUC] 101101012104) of the Independence Point Watershed (Figure 3.4a). It is part of the Lake Sakakawea, North Dakota, sub-basin; Lake Sakakawea basin; Little Missouri sub-region; and Missouri region. Runoff from the well pad would flow to the south into Little Shell Creek (HUC 10110101002798) that flows into Lake Sakakawea. Runoff from the well pad would need to travel approximately 8.4 miles in ephemeral swales and creek channels prior to reaching perennial waters in Lake Sakakawea.

The proposed Dakota-3 Brugh #15-32H well would be located in the Upper Bear Den Creek sub-watershed (HUC 101101012001) of the Bear Den Creek Watershed (Figure 3.4a). It is part of the Lake Sakakawea sub-basin, Little Missouri basin, Little Missouri sub-region, and Missouri region. Runoff from the well pad would flow to the west into an ephemeral unnamed tributary of Upper Bear Den Creek (HUC 10110101001217). Runoff from the well pad would need to travel approximately 21.9 miles in ephemeral swales and creek channels prior to reaching perennial waters upstream of Lake Sakakawea.

The proposed Dakota-3 TAT (694A) #3-11H well would be located in the Boggy Creek sub-watershed (HUC 101101012101) of the Independence Point Watershed (Figure 3.4a). It is part of the Lake Sakakawea sub-basin, Lake Sakakawea basin, Little Missouri sub-region, and Missouri region. Runoff from the well pad would flow to the north into an ephemeral unnamed tributary of Boggy Creek (HUC 10110101001126). Runoff from the well pad would need to travel approximately 5.1 miles in ephemeral swales and creek channels prior to reaching perennial waters upstream of Lake Sakakawea.

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The proposed Dakota-3 Clara #14-17H well would be located in the Upper Squaw Creek sub-watershed (HUC 101101012102) of the Waterchief Bay Watershed (Figure 3.4a). It is part of the Lower Little Missouri River sub-basin, the Little Missouri basin and sub-region, and Missouri region. Runoff from the well pad would flow to the east into an ephemeral unnamed tributary of Upper Squaw Creek (HUC 10110205001699).

Given the topography of the individual sites, runoff occurs largely as sheet-flow. Runoff that concentrates near the Dakota-3 Mandan #3-13H flows to Little Shell Creek; the Dakota-3 Brugh #15-32H flows to Upper Bear Den Creek; the Dakota-3 TAT (694A) #3-11H flows to Boggy Creek; and Dakota-3 Clara #14-17H flows to Upper Squaw Creek. However, each proposed project would be engineered and constructed to minimize the concentration of runoff and to avoid disruption of drainages. Additionally, erosion control and reclamation best management practices (BMPs) would be applied to prevent the mobilization of disturbed soils in the project areas, and stop any sediment from being transported to channelized areas via runoff water. No surface water would be used in well drilling operations. Any chemicals or potentially hazardous materials would be handled in accordance with Zenergy's Spill Prevention, Control, and Countermeasure Plan. Provisions established under this plan would minimize potential impacts to any surface waters associated with an accidental spill.

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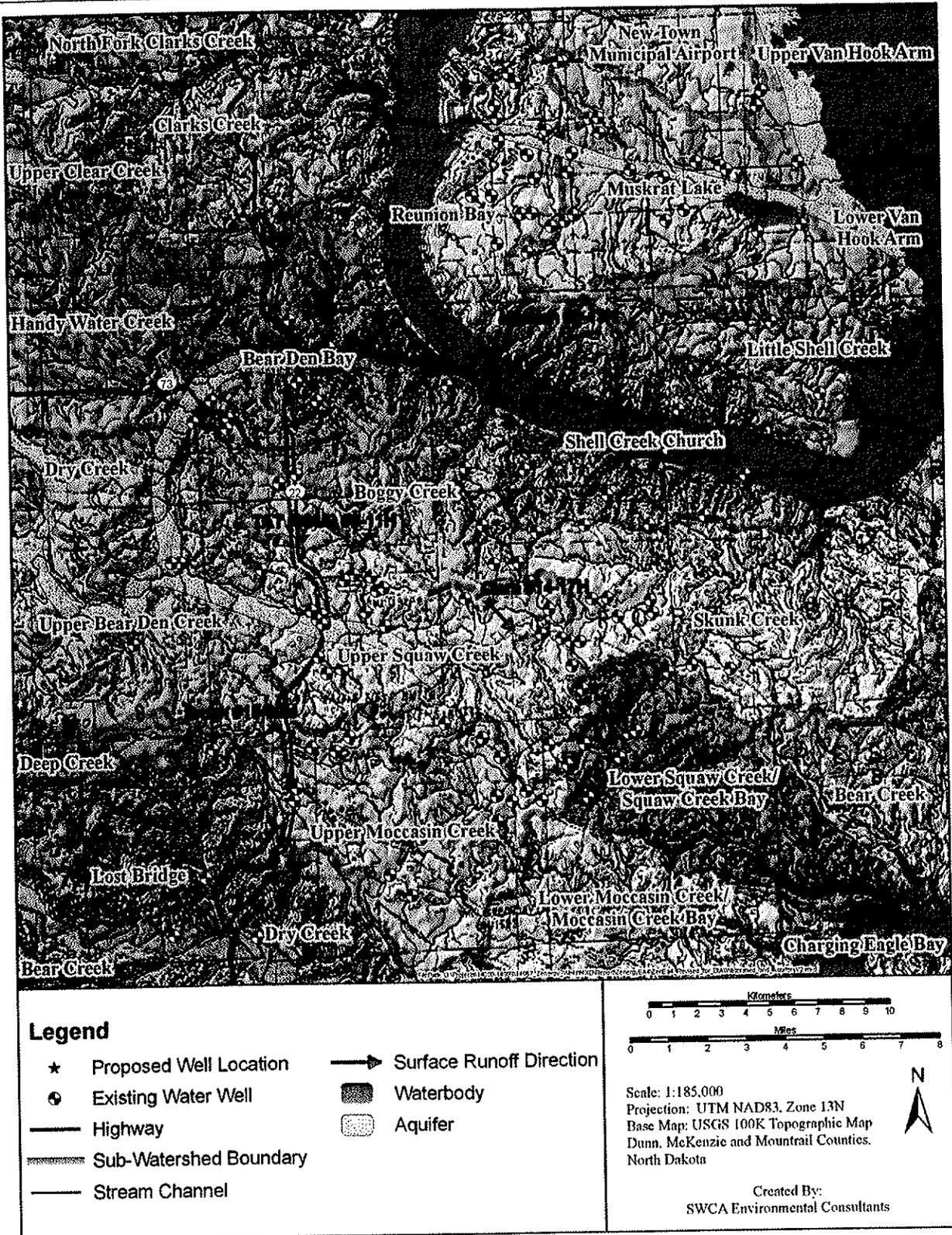


Figure 3.4a: Watershed Map

Groundwater

Aquifers in the project areas include, from deepest to shallowest, the Cretaceous Fox Hills and Hell Creek formations and the Tertiary Ludlow, Tongue River, and Sentinel Butte formations. Table 3.4a summarizes the characteristics of common aquifers within and surrounding the project area.

**Table 3.4a Common aquifers in the proposed project area and surrounding region (Croft 1985; Klausung 1979).**

Period	Formation	Depth Range (feet)	Thickness (feet)	Lithology	Water-Yielding Characteristics	
Quaternary	Alluvium	0-40	40	Silt, sand, and gravel	Maximum yield of 50 gal/min to individual wells from sand and gravel deposits.	
Tertiary	Fort Union Group	Sentinel Butte	0-670	0-670	Silty, clay, sand and lignite	5 to 100 gal/min in sandstone. 1 to 200 gal/min in lignite.
		Tongue River	140-750	350-490	Silty, clay, sand and lignite	Generally less than 100 gal/min in sandstone.
		Cannonball/Ludlow	500-1,150	550-660	Fine- to medium-grained sandstone, siltstone, and lignite	Generally less than 50 gal/min in sandstone.
Cretaceous	Hell Creek	1,000-1,750	200-300	Claystone, sandstone, and mudstone	5 to 100 gal/min in sandstone.	
	Fox Hills	1,100-2,000	200-300	Fine- to medium-grained sandstone and some shale	Generally less than 200 gal/min in sandstone. Some up to 400 gal/min.	

gal/min = gallons per minute

Several shallow aquifers related to post-glacial outwash composed of till, silt, sand, and gravel are located in Dunn County, McKenzie County, and Mountrail County. However, none are within the proposed project areas. The shallow Sentinel Butte Formation, commonly used for domestic supply in the area, outcrops in Dunn and Mountrail counties and meets standards of the North Dakota Department of Health (NDDH) (Croft 1985; Armstrong 1971). Detailed analyses are available from the North Dakota Geological Survey, Bulletin 68, Part III, 1976, and Bulletin 55, Part III, 1971.

Review of electronic records of the North Dakota State Water Commission revealed 153 existing water wells within an approximate 5-mile radius of the proposed well locations (Table 3.4b). Since none of the proposed project areas lie within the boundaries of the post-glacial outwash aquifers, low porosity bedrock near the project wells would act as confining layers to prevent impacts to groundwater resources. Additionally, project well completion methods would prevent cross contamination between aquifers or the introduction of hazardous materials into aquifers. The majority of the identified groundwater wells are also a great distance from the project wells and, therefore, would have minimal hydrologic connection.

**Table 3.4b Existing water wells near the project area (North Dakota State Water Commission 2008)**

Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well
148-093-04	Indian Health Services	1985	4	T148N R93W	Public Supply	71	Unknown	Clara #14-17H
148-093-04CAB1	NDSWC	1973	4	T148N R93W	Unused	340	Tongue River	Clara #14-17H
148-093-04CAB2	NDSWC	1973	4	T148N R93W	Unused	190	Sentinal Butte	Clara #14-17H
148-093-05CCA1	O. Standish	Unknown	5	T148N R93W	Unused	102	Sentinal Butte	Clara #14-17H
148-093-05CCA2	O. Standish	1968	5	T148N R93W	Domestic	72	Buried Glaciaofluvial	Clara #14-17H
148-093-06CCA	Rudolph Sanders	1981	6	T148N R93W	Stock	Unknown	Unknown	Clara #14-17H
148-093-07ADA	R. Goodbird	Unknown	7	T148N R93W	Unused	Unknown	Unknown	Clara #14-17H
148-093-09BBC	Tribal	1950	9	T148N R93W	Unused	40	Buried Glaciaofluvial	Clara #14-17H
148-093-17BBD	J. McKenzie	Unknown	17	T148N R93W	Unused	160	Sentinal Butte	Clara #14-17H
148-094-02	Garland Beston	1982	2	T148N R94W	Domestic	196	Unknown	Clara #14-17H
148-094-03ABB	Tribal	1950	3	T148N R94W	Unused	450	Unknown	Brugh #15-32H
148-094-05BCB	USGS	1994	5	T148N R94W	Monitoring	104	Unknown	Brugh #15-32H
148-094-06CBB	Gabe Fettig	2002	6	T148N R94W	Stock	1,848	Unknown	Brugh #15-32H
148-094-06DBD	Tribal	Unknown	6	T148N R94W	Stock	Unknown	Unknown	Brugh #15-32H
148-094-11AAA2	USGS	1994	11	T148N R94W	Monitoring	58	Unknown	Clara #14-17H
148-094-12DCC	USGS	1992	12	T148N R94W	Monitoring	51	Unknown	Clara #14-17H
148-094-13AAD	Tribal	1950	13	T148N R94W	Unused	450	Unknown	Clara #14-17H
148-094-13BBD	B. Hall	1967	13	T148N R94W	Domestic/Stock	30	Unknown	Clara #14-17H
148-094-14AAB1	USGS	1992	14	T148N R94W	Monitoring	300	Unknown	Clara #14-17H
148-094-14AAB2	NDSWC	1992	14	T148N R94W	Monitoring	315	Tongue River	Clara #14-17H

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Well Number	Owner	Date Drilled	Section	Township/ Range	Type/Use	Depth (feet)	Aquifer	Nearest Well
148-094-14-DAC	B. Hall	1968	14	T148N R94W	Stock	100	Buried Glaciaofluvial	Clara #14- 17H
148-094-15CC2	USGS	1994	15	T148N R94W	Monitoring	36	Unknown	Brugh #15- 32H
148-094-17DCD2	USGS	1994	17	T148N R94W	Monitoring	70	Unknown	Brugh #15- 32H
148-094-20DDD	Tribal	Unknown	20	T148N R94W	Unused	134	Till	Brugh #15- 32H
148-094-21AAB1	USGS	1994	21	T148N R94W	Monitoring	190	Unknown	Brugh #15- 32H
148-094-21AAB2	USGS	1994	21	T148N R94W	Monitoring	123	Unknown	Brugh #15- 32H
148-094-28	Matt Young Bird, Sr.	1982	28	T148N R94W	Domestic	225	Unknown	Brugh #15- 32H
148-095-03	Daryl Young Bird	1985	3	T148N R95W	Domestic	247	Unknown	Brugh #15- 32H
148-095-12DB	Joe Woundedface	1993	12	T148N R95W	Domestic	15	Unknown	Brugh #15- 32H
148-095-12DCC2	NDSWC	1992	12	T148N R95W	Monitoring	52	Sentinal Butte/ Tongue River	Brugh #15- 32H
148-095-22CCA	NDSWC	Unknown	22	T148N R95W	Monitoring	1,455	Little Missouri River	Brugh #15- 32H
148-095-33BDB	D. Meyer	1931	33	T148N R95W	Stock	436	Tongue River	Brugh #15- 32H
148-095-35BDD	T. Fettig	Unknown	35	T148N R95W	Unused	400	Tongue River	Brugh #15- 32H
149-092-29DCC	Tribal	Unknown	29	T149N R92W	Unused	404	Sentinal Butte	Clara #14- 17H
149-092-30DCB	Ted Lonefight III	2003	30	T149N R92W	Domestic	307	Unknown	Clara #14- 17H
149-093-02ACB	C. Perkins	1962	2	T149N R93W	Stock	647	Sentinal Butte	Clara #14- 17H
149-093-05CDC	Unknown	1961	5	T149N R93W	Stock	84	Sentinal Butte	Clara #14- 17H
149-093-08DCC	M. Fox	1960	8	T149N R93W	Domestic	500	Sentinal Butte	Clara #14- 17H
149-093-09ABD	Dale McGrady	1981	9	T149N R93W	Stock	135	Unknown	Clara #14- 17H
149-093-09CCC	St. Anthonys	1988	9	T149N R93W	Domestic	440	Unknown	Clara #14- 17H

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Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well
149-093-09CCD	St. Anthonys	1952	9	T149N R93W	Domestic	65	Sentinal Butte	Clara #14-17H
149-093-10AAA	Tribal	1950	10	T149N R93W	Unused	450	Unknown	Clara #14-17H
149-093-12AB	Ivan Johnson	1976	12	T149N R93W	Stock	348	Unknown	Clara #14-17H
149-093-14CCC	Tribal	Unknown	14	T149N R93W	Unused	432	Sentinal Butte	Clara #14-17H
149-093-14CDD2	USGS	1994	14	T149N R93W	Monitoring	35	Unknown	Clara #14-17H
149-093-16BDD	Paul Rosario	1994	16	T149N R93W	Domestic	450	Unknown	Clara #14-17H
149-093-18DDB	Tribal	Unknown	18	T149N R93W	Unused	465	Sentinal Butte	Clara #14-17H
149-093-21AAD	Gerald Fox	2000	21	T149N R93W	Domestic	5	Unknown	Clara #14-17H
149-093-21DCA	E. Wicker	Unknown	21	T149N R93W	Unused	35	Unknown	Clara #14-17H
149-093-22CCD	Arla Muzzy	2002	22	T149N R93W	Domestic	92	Unknown	Clara #14-17H
149-093-23ACD	Unknown	Unknown	23	T149N R93W	Unused	34	Sentinal Butte	Clara #14-17H
149-093-24ABB	USGS	1994	24	T149N R93W	Monitoring	35	Unknown	Clara #14-17H
149-093-24AC	Mobil Oil Co.	Unknown	24	T149N R93W	Unused	11,331	Unknown	Clara #14-17H
149-093-24ACC2	USGS	1994	24	T149N R93W	Monitoring	33	Unknown	Clara #14-17H
149-093-25DDD	Tribal	Unknown	25	T149N R93W	Unused	147	Sentinal Butte	Clara #14-17H
149-093-27ABA	H. Youngbird	Unknown	27	T149N R93W	Domestic	65	Sentinal Butte	Clara #14-17H
149-093-27ABA2	Patricia McKenzie	2004	27	T149N R93W	Domestic	89	Unknown	Clara #14-17H
149-093-27BAA	USGS	1994	27	T149N R93W	Monitoring	60	Unknown	Clara #14-17H
149-093-27CAD	USGS	1994	27	T149N R93W	Monitoring	165	Unknown	Clara #14-17H
149-093-34ACA	Tribal	Unknown	34	T149N R93W	Unused	357	Sentinal Butte	Clara #14-17H
149-094-08 DCB	Randy Binger	1992	8	T149N R94W	Domestic	195	Unknown	TAT(694A) #3-11H
149-094-14 ACD	Mike Mason	1973	14	T149N R94W	Domestic	66	Unknown	TAT(694A) #3-11H

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Well Number	Owner	Date Drilled	Section	Township/ Range	Type/Use	Depth (feet)	Aquifer	Nearest Well
149-094-14-1	Mandaree School	1988	14	T149N R94W	Monitoring	14	Unknown	TAT(694A) #3-11H
149-094-14-2	BIA	2002	14	T149N R94W	Monitoring	29	Unknown	TAT(694A) #3-11H
149-094-14-3	BIA	2002	14	T149N R94W	Monitoring	28	Unknown	TAT(694A) #3-11H
149-094-14-4	BIA	2000	14	T149N R94W	Monitoring	25	Unknown	TAT(694A) #3-11H
149-094-14BA	Mandaree	1970	14	T149N R94W	Public Supply	1,745	Unknown	TAT(694A) #3-11H
149-094-15 AAA	Sandy Youngbird	2006	15	T149N R94W	Domestic	278	Unknown	TAT(694A) #3-11H
149-094-15 ABD	Tilly Lone Fight	2005	15	T149N R94W	Domestic	320	Unknown	TAT(694A) #3-11H
149-094-16 DDC	Jimmy Stone	1981	16	T149N R94W	Domestic	200	Unknown	TAT(694A) #3-11H
149-094-21AAD	NDSWC	1980	21	T149N R94W	Unused	147	Unknown	TAT(694A) #3-11H
149-094-22BBB	NDSWC	1980	22	T149N R94W	Unknown	140	Unknown	TAT(694A) #3-11H
149-094-22BCB	NDSWC	1980	22	T149N R94W	Unused	80	Unknown	TAT(694A) #3-11H
149-094-23 ACD	USGS	1994	23	T149N R94W	Monitoring	119	Unknown	Brugh #15-32H
149-094-23 BBA	USGS	1994	23	T149N R94W	Monitoring	68	Unknown	TAT(694A) #3-11H
149-094-27	Margaret Wolf	1982	27	T149N R94W	Domestic	63	Unknown	Brugh #15-32H
149-094-27 ACD	George Wolf	1973	27	T149N R94W	Domestic	36	Unknown	Brugh #15-32H
149-094-27CB	George Wolf	1973	27	T149N R94W	Domestic	36	Unknown	Brugh #15-32H
149-094-28 AAD	USGS	1992	28	T149N R94W	Monitoring	120	Unknown	Brugh #15-32H
149-094-28 AAD	USGS	1992	28	T149N R94W	Monitoring	295	Unknown	Brugh #15-32H
149-92-05CCC	Three Affiliated Tribes	1994	5	T149N R92W	Unknown	570	Unknown	Mandan #3-13H
150-093-19 ACB	Waterford City	1988	19	T150N R93W	Municipal	90	Unknown	Mandan #3-13H
150-093-31ADD	Unknown	1961	31	T150N R93W	Unknown	336	Sentinal Butte/ Tongue River	Clara #14-17H

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Well Number	Owner	Date Drilled	Section	Township/ Range	Type/Use	Depth (feet)	Aquifer	Nearest Well
150-093-33CCA	Unknown	1960	33	T150N R93W	Unknown	388	Sentinal Butte/ Tongue River	Clara #14- 17H
150-094-09 ACC	Howard Fettig	2001	9	T150N R94W	Stock	1,617	Unknown	TAT(694A) #3-11H
150-094-15ABC	Nick Fox	1962	15	T150N R94W	Stock	414	Unknown	TAT(694A) #3-11H
150-094-16 CAA	Diane Avery	1994	16	T150N R94W	Domestic	262	Unknown	TAT(694A) #3-11H
150-094-16ACC1	NDSWC	1980	16	T150N R94W	Unused	40	Unknown	TAT(694A) #3-11H
150-094-16ACC2	NDSWC	1980	16	T150N R94W	Unused	40	Unknown	TAT(694A) #3-11H
150-094-19 BDD	Shane Johnson	2000	19	T150N R94W	Domestic/ Stock	175	Unknown	TAT(694A) #3-11H
150-094-19 BDD	Shane Johnson	2004	19	T150N R94W	Domestic	202	Unknown	TAT(694A) #3-11H
150-094-19 DD	Veronica Serdahl	1989	19	T150N R94W	Domestic	820	Unknown	TAT(694A) #3-11H
150-094-21ABA	Youngwolf	1964	21	T150N R94W	Stock	380	Unknown	TAT(694A) #3-11H
150-094-22CBA	Youngwolf	1964	22	T150N R94W	Stock	327	Unknown	TAT(694A) #3-11H
150-094-30 AAC	Lawrence Birdsbill	1986	30	T150N R94W	Stock	200	Unknown	TAT(694A) #3-11H
150-094-33 ACC	USGS	1992	33	T150N R94W	Test	195	Unknown	TAT(694A) #3-11H
150-094-33CB	Occidental	1964	33	T150N R94W	Unknown	11,630	Unknown	TAT(694A) #3-11H
150-095-24DDD	Melvin Johnson	2003	24	T150N R95W	Domestic	420	Unknown	TAT(694A) #3-11H
151-092-08BBB	USGS	1967	8	T151N R92W	Unused	220	Unknown	Mandan #3-13H
151-092-15ADD	D. Littlefield	Unknown	15	T151N R92W	Stock	265	Unknown	Mandan #3-13H
151-092-15BBB	M. Sand	1964	15	T151N R92W	Domestic	65	Unknown	Mandan #3-13H
151-092-22DDD	USGS	1967	22	T151N R92W	Unused	240	Unknown	Mandan #3-13H
151-092-23CCA	L. Lund Sr.		23	T151N R92W	Unused	125	Unknown	Mandan #3-13H
151-092-30ABC	L.L. Stout	1925	30	T151N R92W	Domestic	26	Unknown	Mandan #3-13H

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Well Number	Owner	Date Drilled	Section	Township/ Range	Type/Use	Depth (feet)	Aquifer	Nearest Well
151-092-31AAA	USGS	1967	31	T151N R92W	Unused	60	Unknown	Mandan #3-13H
151-092-31BDD	D.R. Manson	Unknown	31	T151N R92W	Domestic/ Stock	62	Unknown	Mandan #3-13H
151-092-33CDC	M. Niva	Unknown	33	T151N R92W	Domestic	44	Unknown	Mandan #3-13H
151-092-34DAA	USGS	1966	34	T151N R92W	Unused	138	Unknown	Mandan #3-13H
151-093-09ACB	C.B. Shobe	1954	9	T151N R93W	Stock	180	Unknown	Mandan #3-13H
151-093-09DBA	C.B. Shobe	1960	9	T151N R93W	Stock	38	Unknown	Mandan #3-13H
151-093-14DAB	D.R. Holding	Unknown	14	T151N R93W	Unused	50	Unknown	Mandan #3-13H
151-093-15CDA	P. Evenson	1962	15	T151N R93W	Domestic/ Stock	172	Unknown	Mandan #3-13H
151-093-16BCD	C.B. Shobe	1951	16	T151N R93W	Domestic/ Stock	150	Unknown	Mandan #3-13H
151-093-21BBA	C.B. Shobe	1952	21	T151N R93W	Stock	129	Unknown	Mandan #3-13H
151-093-22DDD	USGS	1967	22	T151N R93W	Unused	450	Unknown	Mandan #3-13H
151-093-23BCC	USGS	1966	23	T151N R93W	Unused	120	Unknown	Mandan #3-13H
151-093-28DCD	A. Bangpn	1952	28	T151N R93W	Domestic	56	Unknown	Mandan #3-13H
151-093-28DDD	A. Bangpn	1951	28	T151N R93W	Domestic/ Stock	94	Unknown	Mandan #3-13H
151-093-29ADD	C.B. Shobe	1952	29	T151N R93W	Domestic/ Stock	270	Unknown	Mandan #3-13H
151-093-33CBB	G. Larsen	1952	33	T151N R93W	Unused	78	Unknown	Mandan #3-13H
151-093-34AAC	E. Weninger	Unknown	34	T151N R93W	Stock	34	Unknown	Mandan #3-13H
151-093-35BBB	H.S. Bangpn	1950	35	T151N R93W	Domestic/ Stock	274	Unknown	Mandan #3-13H
151-092-30ADD	Unknown	1992	30	T151N R92W	Monitoring	210	Unknown	Mandan #3-13H
151-093-10AAB	Unknown	1981	10	T151N R93W	Domestic	421	Tongue River	Mandan #3-13H
151-093-21ADD	Unknown	1992	21	T151N R93W	Monitoring	290	Unknown	Mandan #3-13H
151-093-27BBB	Unknown	1992	27	T151N R93W	Monitoring	240	Unknown	Mandan #3-13H

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Well Number	Owner	Date Drilled	Section	Township/ Range	Type/Use	Depth (feet)	Aquifer	Nearest Well
151-093-35BBB2	Unknown	1988	35	T151N R93W	Domestic	298	Unknown	Mandan #3-13H
151-092-15 BBB	Melvin Sand	1996	15	T151N R92W	Domestic	168	Unknown	Mandan #3-13H
151-092-16 ADD	Bernie Fox	2006	16	T151N R92W	Domestic	282	Unknown	Mandan #3-13H
151-092-20 CDB	James Pennington	2002	20	T151N R92W	Stock	174	Unknown	Mandan #3-13H
151-092-20 DDD	Gary Danks	2000	20	T151N R92W	Domestic	204	Unknown	Mandan #3-13H
151-092-28 BBB	Lawrence Shvelke	1982	28	T151N R92W	Domestic	200	Unknown	Mandan #3-13H
151-092-30 ADD	USGS	1992	30	T151N R92W	Monitoring	210	Unknown	Mandan #3-13H
151-092-30 BAD	Ted Wadholm	1992	30	T151N R92W	Domestic	48	Unknown	Mandan #3-13H
151-092-31 BDA	Steven Pennington	2004	31	T151N R92W	Stock	390	Unknown	Mandan #3-13H
151-092-33 DAC	David Hilleren	2004	33	T151N R92W	Stock	189	Unknown	Mandan #3-13H
151-093-10 AAA	Raymond Pennington	1992	10	T151N R93W	Domestic/ Stock	875	Unknown	Mandan #3-13H
151-093-10 AAB	Raymond Pennington	1981	10	T151N R93W	Stock	414	Unknown	Mandan #3-13H
151-093-10 BAA	Raymond Pennington	1988	10	T151N R93W	Stock	266	Unknown	Mandan #3-13H
151-093-14 DBB	Cameron Wolding	2007	14	T151N R93W	Stock	299	Unknown	Mandan #3-13H
151-093-14 DDC	Orvin Wolding	1982	14	T151N R93W	Stock	190	Unknown	Mandan #3-13H
151-093-16 BB	Charles Shoebe	1985	16	T151N R93W	Domestic	105	Unknown	Mandan #3-13H
151-093-21 ADD	USGS	1992	21	T151N R93W	Monitoring	290	Unknown	Mandan #3-13H
151-093-24 DCC	USGS	1992	24	T151N R93W	Monitoring	145	Unknown	Mandan #3-13H
151-093-27 BBB	USGS	1992	27	T151N R93W	Test	240	Unknown	Mandan #3-13H
151-093-28 DDD	Jeff Bangen	1987	28	T151N R93W	Domestic/ Stock	97	Unknown	Mandan #3-13H
151-093-29 BDD	Charles Shoebe	1996	29	T151N R93W	Domestic/ Stock	410	Unknown	Mandan #3-13H
151-093-33 DDC	Richard Pennington	1981	33	T151N R93W	Stock	326	Unknown	Mandan #3-13H

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Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well
151-093-34 BDA	Ernie Weninger	1984	34	T151N R93W	Domestic	284	Unknown	Mandan #3-13H
151-093-35 BBB	Richard Bangen	1988	35	T151N R93W	Domestic/Stock	283	Unknown	Mandan #3-13H
149-095-12CAA	BIA	1999	12	T149N R95W	Monitoring	20	Unknown	Brugh #15-32H
149-095-12CAB	BIA	1999	12	T149N R95W	Monitoring	25	Unknown	Brugh #15-32H
149-095-23CB	John Kirkland	1988	23	T149N R95W	Stock	166	Unknown	Brugh #15-32H

BIA = Bureau of Indian Affairs NDSWC = North Dakota State Water Commission USGS = U.S. Geological Survey

### 3.5 Wetland/Riparian Habitat and Threatened or Endangered Species

#### Wetland/Riparian Habitat

National Wetland Inventory maps maintained by the U.S. Fish and Wildlife Service (USFWS) do not identify any jurisdictional wetlands within the proposed well pads or access roads. No wetlands were observed along any access road ROWs or at any of the well sites during surveys conducted by SWCA Environmental Consultants (SWCA) biologists in April 2009. No riparian or wetland habitats would be directly or indirectly impacted by the proposed access roads or wells.

#### Threatened/Endangered Species

Species may be listed by the USFWS as threatened or endangered under the Endangered Species Act (ESA). Tribes and states may recognize additional species of concern; such lists are taken under advisement by federal agencies but are not legally binding in the manner of the ESA.

The USFWS identifies seven federally listed species occurring in Dunn, McKenzie, and/or Mountrail counties (Table 3.5a). An informal Section 7 consultation has not yet occurred but can be conducted based on the information presented below. The following is a discussion of potentially affected habitat associated with these species.

**Table 3.5a Potential effect of threatened and endangered species to occur in the project area.**

Common Name	Scientific Name	Potential Effect
Black-footed ferret	<i>Mustela nigripes</i>	no effect
Dakota skipper	<i>Hesperia dacotae</i>	may affect, but is not likely to adversely affect
Gray wolf	<i>Canis lupus</i>	no effect
Interior least tern	<i>Sterna antillarum</i>	may affect, but is not likely to adversely affect
Pallid sturgeon	<i>Scaphirhynchus albus</i>	may affect, but is not likely to adversely affect
Piping plover	<i>Charadrius melodus</i>	may affect, but is not likely to adversely affect
Whooping crane	<i>Grus americana</i>	may affect, but is not likely to adversely affect

No adverse effects on listed species would be expected due to the unlikely nature of their occurrence within the proposed project areas. Interim reclamation and the use of BMPs over the life of the projects would further reduce long-term impacts to all wildlife. Monitoring of species in the area would occur as part of the normal monitoring processes. Lake Sakakawea and the Little Missouri River contain suitable nesting sites for the piping plover and the interior least tern. The pallid sturgeon also inhabits these bodies of water and could be indirectly impacted by runoff if proper BMPs were not deployed. Due to the distance from the wells to both the lake and river, disturbance from construction and the running of the wells should not have a direct impact. Table 3.5b summarizes the straight-line distances to Lake Sakakawea and the Little Missouri River from the wells.

**Table 3.5b Straight-line distance to Lake Sakakawea and the Little Missouri River from each of the wells.**

Proposed Well	Miles to Lake Sakakawea	Miles to Little Missouri River
Mandan #3-13H	1.97	10.23
Brugh #15-32H	10.26	5.81
TAT (694A) #3-11H	4.65	10.79
Clara #14-17H	4.38	11.90

### 3.6 Soils

Site visits were conducted during April 2009 to document existing soil conditions at each well location and the associated proposed and existing access roads. Specialists determined that the existing portions of the access roads are in good condition with no signs of erosion. Table 3.6a below summarizes the soil types and the potential disturbance related to new construction.

**Table 3.6a Acres of soil disturbance.**

Soil	Depth (inches)	New Access Road		Well Pad (acres)	Total Acres
		Length (feet)	Acres		
<b>Mandan #3-13H</b>		<b>643.74</b>	<b>0.74</b>	<b>3.70</b>	<b>4.44</b>
<b>Access Road and Well Site</b>					
Silty clay loam	0-6				
Silty clay loam	6-16				
<b>Brugh #15-32</b>		<b>173</b>	<b>0.20</b>	<b>3.70</b>	<b>3.90</b>
<b>Access Road and Well Site</b>					
Silt loam	0-16				
<b>TAT (694A) #3-11H</b>		<b>10,609.77</b>	<b>12.18</b>	<b>3.70</b>	<b>15.88</b>
<b>Access Road Pit 1</b>					
Silty clay	0-12				
Silty clay loam	12-16				
<b>Access Road Pit 2</b>					
Silty clay loam	0-8				
Clay loam	8-16				
<b>Well Site</b>					
Silty clay loam	0-12				
Silt loam	12-16				
<b>Clara #14-17H</b>		<b>150</b>	<b>0.17</b>	<b>3.70</b>	<b>3.87</b>
<b>Access Road and Well Site</b>					
Clay loam	0-6				
Silty clay	6-16				

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## Individual Site Descriptions

### Mandan #3-13H

The proposed access road for this location would extend south from 28<sup>th</sup> Street NW. The following information was collected from a soil pit at the proposed well pad and access road:

- At a depth of 0 to 6 inches, the soil texture is a silty clay loam, Munsell color 10YR 3/2 (very dark grayish-brown).
- At a depth of 6 to 16 inches, the soil texture is a silty clay loam, Munsell color 10YR 4/3 (brown).
- The pit was excavated on a slope of approximately 0 to 1°.

This location has a Soil Erodibility Factor (K) of 0.28. Using the Revised Universal Soil Loss Equation (RUSLE), there could be 2.45 tons/acre/year of soil loss from the site. The site would be monitored during and after construction and BMPs would be used to prevent erosion, minimize runoff and loss of sediment, and ensure soil stabilization.

### Brugh #15-32H

The proposed access road for this location would extend west from BIA 30. The following information was collected from a soil pit at the proposed well pad and access road:

- At a depth of 0 to 16 inches, the soil texture is a silt loam, Munsell color 10YR 3/1 (very dark gray).
- This pit was excavated on a slope of approximately 0 to 1°.

This location has a Soil Erodibility Factor (K) of 0.20. Using the RUSLE, there could be 1.74 tons/acre/year of soil loss from the site. The site would be monitored during and after construction and BMPs would be used to prevent erosion, minimize runoff and loss of sediment, and ensure soil stabilization.

### TAT (694A) #3-11H

The proposed access road is an existing two-track that travels east from State Highway 22 to the proposed well location. The following information was collected from a soil pit just east of State Highway 22:

- At a depth of 0 to 12 inches, the soil texture is a silty clay, Munsell color 10YR 3/1 (very dark gray).
- At a depth of 12 to 16 inches, the soil texture is a silt loam, Munsell color 10YR 3/3 (dark brown).
- The pit was excavated on a slope of approximately 0 to 1°.

The proposed access road would also cross an ephemeral stream before reaching the proposed well location. The following information was collected from a soil pit at the stream site:

- At a depth of 0 to 8 inches, the soil texture is a silty clay loam, Munsell color 10YR 2/2 (very dark brown).
- At a depth of 8 to 16 inches, the soil texture is a silt loam, Munsell color 10YR 3/2 (very dark grayish-brown).
- The pit was excavated on a slope of approximately 0 to 1°.

The following information was collected from a soil pit at the proposed well pad:

- At a depth of 0 to 12 inches, the soil texture is a silty clay loam, Munsell color 10YR 3/2 (very dark grayish-brown).
- At a depth of 12 to 16 inches, the soil texture is a silt loam, Munsell color 10YR 5/3 (brown).

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- The pit was excavated on a slope of approximately 0 to 1°.

This location has a Soil Erodibility Factor (K) of 0.28. Using the RUSLE, there could be 2.45 tons/acre/year of soil loss from the site. The site would be monitored during and after construction and BMPs would be used to prevent erosion, minimize runoff and loss of sediment, and ensure soil stabilization.

#### **Clara #14-17H**

The proposed access road for this location would extend south from BIA 12. The following information was collected from a soil pit at the proposed well pad and access road:

- At a depth of 0 to 6 inches, the soil texture is a clay loam, Munsell color 10YR 3/1 (very dark gray).
- At a depth of 6 to 16 inches, the soil texture is a silty clay, Munsell color 10YR 3/3 (dark brown).
- The pit was excavated on a slope of approximately 0 to 1°.

This location has a Soil Erodibility Factor (K) of 0.24. Using the RUSLE, there could be 3.46 tons/acre/year of soil loss from the site. The site would be monitored during and after construction and BMPs would be used to prevent erosion, minimize runoff and loss of sediment, and ensure soil stabilization.

### **3.7 Vegetation and Invasive Species**

Josh Ruffo, Stephen Ross, and/or Eric Munscher, SWCA biologists, conducted site visits in April 2009 to document existing vegetation conditions at each proposed location.

#### **Mandan #3-13H**

The proposed access road is an existing two-track that travels south along the half section line that begins off of 28<sup>th</sup> Street NW approximately 11.5 miles south of New Town. The well pad site is located on a canola field. The access road is dominated by green needlegrass (*Stipa viridula*), field brome (*Bromus arvensis*), and prairie clover (*Dalea* spp.).

#### **Brugh #15-32H**

The well pad would be accessed from a proposed road that would extend south from BIA 30. The site is dominated by little blue stem (*Schizachyrium scoparium*), downy hawthorn (*Crataegus mollis*), western snowberry (*Symphoricarpos occidentalis*), Prairie sagewort (*Artemisia frigida*), and green needlegrass. Other vegetation noted within the project area included coneflower (*echinacea purpurea*) and prairie crocus (*Anemone patens*).

#### **TAT (694A) #3-11H**

The access road extends west from State Highway 22 and travels to a previously permitted well location. The road then travels in a southeastern direction towards the well location. The site is dominated by western snowberry and little bluestem.

#### **Clara #14-17H**

The proposed access road is an existing two-track that travels south from BIA 12 approximately 3 miles east of Mandaree. The site is currently being grazed by livestock and horses. It is dominated by western snowberry, field brome, little bluestem, coneflower, and green needlegrass. Buffaloberry (*Shepherdia argentea*) shrubs are growing on the outskirts of the well location.

The proposed projects would create approximately 28.09 acres of short- and long-term surface disturbance, during which removal of existing vegetation could introduce noxious weeds into the project areas. Infestations within the project areas could spread to neighboring lands resulting in reductions in the quality or quantity of forage or crop production.

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The APDs and this EA require the developer to control noxious weeds within the project areas. BMPs that would help prevent the spread of noxious weeds include:

- cleaning vehicles that have been driven in areas that contain non-native species with high-pressure water spray equipment before entering a project area;
- prohibiting vehicles and equipment from driving outside road ROWs and well pad locations;
- adding mulch to disturbed areas;
- planting cover crops to compete with weed species;
- using mechanical weed control or herbicides; and
- educating project personnel about the importance of preventing the spread of noxious weeds.

No surface disturbance, including disturbance created by driving equipment or vehicles, outside of the approved ROWs or well pads would occur. Zenergy would conduct interim reclamation, as required by Onshore Order #1, to restore areas not needed following construction. Areas stripped of topsoil, with the exception of long-term disturbance on the well pads, would be reclaimed at the earliest opportunity. Seeding would occur after cessation of construction activities in the fall (September to November). If fall seeding cannot be completed, spring seeding should take place in February or March, as conditions dictate. Certified weed-free straw and seed would be used for all construction, seeding, and reclamation efforts.

### 3.8 Cultural Resources

*Cultural resources* is a broad term encompassing sites, objects, or practices of archaeological, historical, cultural and religious significance. 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. 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). As a result, BIA consults and corresponds with the THPO on all projects proposed within the exterior boundaries of the Fort Berthold Reservation. The SHPO may have useful information, but has no official role regarding proposed federal actions on trust land. The MHA Nation has also designated responsible parties for consultations and actions under NAGPRA and cultural resources generally.

Cultural resource inventories of these well pads and access roads were conducted by personnel of SWCA Environmental Consultants, using a pedestrian methodology. For the Dakota-3 Mandan #3-13H project approximately 25.8 acres were intensively inventoried on April 29, 2009 (Retter *et al.* 2009). One historic farmstead ruin (32MN800) was located during the inventory, which 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 (16 USC 1996). For the Dakota-3 Brugh #15-32 project approximately 10 acres were intensively inventoried on April 17, 2009 (Retter and Reed 2009a). One ineligible prehistoric isolated find was recorded in this inventory. For the Dakota-3 TAT(694A) #3-11H project approximately 19.28 acres were intensively inventoried on April 28, 2009 (Retter and Reed 2009b). Two ineligible prehistoric isolated finds were recorded in this inventory. For the Dakota-3 Clara #14-17H project approximately 10 acres were intensively inventoried on April 16, 2009 (Slessman 2009). 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. No properties were located that appear to qualify for protection under the American Indian Religious Freedom Act (16 USC 1996). 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, as the archaeological site recorded in the Dakota-3 Mandan #3-13H well pad inventory will be avoided. This determination for the Dakota-3 Mandan #3-13H, Dakota-3 Brugh #15-32 and the Dakota-3 TAT(694A) #3-11H projects was communicated to the THPO on August 25, 2009; and for the Dakota-3 Clara #14-17H well pad on September 10, 2009. The THPO concurred with the determination on the first three wells on September 10, 2009, and with that for the Dakota-3 Clara #14-17H well pad on September 11, 2009.

### 3.9 Socioeconomics

Socioeconomic conditions include population, demographics, income, employment, and housing. These conditions can be analyzed and compared at various scales. This analysis focuses on the reservation, the four counties that overlap most of the Reservation and the state of North Dakota. The state population showed little change between the last two censuses (1990–2000), but there were notable changes locally, as shown in Table 3.9a. Populations in Dunn, McKenzie, McLean, and Mountrail counties declined 5 to 11%, while population on the Fort Berthold Reservation increased by almost 10%. These trends are expected to continue (Rathge *et al.* 2002). While American Indians are the predominant group on the reservation, they are a minority everywhere else in the state. More than two-thirds (3,986) of the Reservation population are tribal members.

Table 3.9a: Population and Demographics

County or Reservation	Population in 2000	% of State Population	% Change 1990-2000	Predominant Group	Predominant Minority
Dunn County	3,600	0.56%	- 10.1%	White	American Indian (12%)
McKenzie County	5,737	0.89%	- 10.1%	White	American Indian (21%)
McLean County	9,311	1.45%	- 11.0%	White	American Indian (6%)
Mountrail County	6,631	1.03%	- 5.6%	White	American Indian (30%)
Fort Berthold Reservation	5,915	0.92%	+ 9.8%	American Indian	White (27%)
Statewide	642,200	100%	+ 0.005%	White	American Indian (5%)

Source: U.S. Census Bureau 2007.

In addition to the ranching and farming that are employment mainstays in western North Dakota, employment on the reservation largely consists of ranching, farming, tribal government, tribal enterprises, schools, and federal agencies. The MHA Nation's Four Bears Casino and Lodge, near New Town, employs over 320 people, 90% of which are tribal members (Three Affiliated Tribes 2008).

As shown in Table 3.9b, counties overlapping the Reservation tend to have per capita incomes, median household incomes, and employment rates that are lower than North Dakota statewide averages. Reservation residents have lower average incomes and higher unemployment rates compared to the encompassing counties. MHA Nation members are in turn disadvantaged relative to overall Reservation incomes and unemployment rates that average in non-Indian data. The most recent census found that per capita income for residents of the Reservation is \$10,291 (less than 1/3 the state average). Overcrowded housing skews the median reservation household income upward to \$26,274 (about 1/3 the state average). A BIA report in 2003 found that 33% of employed MHA Nation members were living below federal poverty levels. The unemployment rate for tribal members is 22 %, compared to 11.1% for the reservation as a whole and 4.6% statewide.

**Table 3.9b: Income and Unemployment**

Unit of Analysis	Per Capita Income	Median Household Income	Unemployment Rate (2007)	Employed but Below Poverty Level	Percent of All People in Poverty
MHA Nation members	--	--	22 %	33 %	Unknown
Fort Berthold Reservation	\$ 10,291	\$ 26,274	11.1 %	--	Unknown
Mountrail County	\$ 29,071	\$ 34,541	5.8 %	--	15.4%
Dunn County	\$ 27,528	\$ 35,107	3.4 %	--	13%
McKenzie County	\$ 27,477	\$ 35,348	3.1 %	--	15.8 %
McLean County	\$ 32,387	\$ 37,652	4.7 %	--	12.8%
North Dakota	\$ 31,871	\$ 40,818	3.2 %	--	11.2 %

Source: U.S. Department of Agriculture Economic Research Data 2008 and BIA 2003.

Availability and affordability of housing could impact oil and gas development and operations. Housing information is summarized in Table 3.9c. The tribal Housing Authority manages a majority of the housing units within the reservation. Housing typically consists of mutual help homes built through various government programs, low-rent housing units, and scattered-site homes. Private purchase and rental housing are available in New Town. New housing construction has recently increased within much of the analysis area, but availability remains low.

**Table 3.9c: Housing Units – 2000 (U.S. Census Bureau 2007 and 2008).**

Housing Development	Fort Berthold Reservation	Dunn County	McKenzie County	McLean County	Mountrail County
<b>Existing Housing</b>					
Owner-Occupied Units	1,122	1,570	2,009	4,332	2,495
Renter-Occupied Units	786	395	710	932	941
Total	1,908	1,965	2,719	5,264	3,436
New Private Housing Building Permits 2000-2005	--	18	4	135	113
<b>Housing Development Statistics</b>					
State rank in housing starts	--	51 of 53	15 of 53	21 of 53	17 of 53
National rank in housing starts	--	3112 / 3141	2498 / 3141	2691 / 3141	2559 / 3141

The proposed project is not expected to have measurable impacts on population trends, local unemployment rates or housing starts. Relatively high-paying construction jobs would result from exploration and development of oil and gas reserves on the reservation, but most of these opportunities are expected to be short-term. The proposed action would require temporary employees during the well construction cycle and one to two full-time employees for the long-term production cycle. Short-term construction employment would provide some economic benefit. Long-term commercial operations would provide significant royalty income and indirect economic benefits.

### 3.10 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, was signed by President Clinton in 1994. The Order 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 U.S. Environmental Protection Agency (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. It is nevertheless clear that tribal members on the Great Plains qualify for EJ consideration as both a minority and low-income population. The population of the Dakotas is predominantly Caucasian. While some 70% of Reservation residents are tribal members, Indians comprise only 5% of North Dakota residents and 12% of the population of Dunn County. 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 considers the 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 MHA Nation 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, preclude other benefits. Exploration and development would provide many relatively high-paying jobs, with oversight from the Tribal Employment Rights Office.

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

Potential impacts to tribes and tribal members include disturbance of cultural resources. 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. This potential is significantly reduced following the surveys of proposed well locations and access road routes and determinations by the BIA that there will be no historic properties affected. Nothing is known to be present, furthermore, that qualifies for protection under the *American Indian Religious Freedom Act*. Potential for disproportionate impacts is further mitigated by requirements for immediate work stoppage following an unexpected discovery of cultural resources of any type. Mandatory consultations will 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.

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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.

### **3.11 Mitigation and Monitoring**

Many protective measures and procedures are described in this document and in the APDs. No laws, regulations, or other requirements have been waived; no compensatory mitigation measures are required. Monitoring of cultural resource impacts by qualified personnel is recommended during all ground-disturbing activities.

### **3.12 Irreversible and Irrecoverable Commitment of Resources**

Removal and consumption of oil and/or gas from the Bakken Formation would be an irreversible and irretrievable commitment of resources. Other potential resource commitments include acreage devoted to disposal of cuttings, soil lost through wind and water erosion, cultural resources inadvertently destroyed, wildlife killed during earthmoving or in collisions with vehicles, and energy expended during construction and operation.

### **3.13 Short-Term Use Versus Long-Term Productivity**

Short-term activities would not detract significantly from long-term productivity of the project areas. The small areas dedicated to the access roads and well pads 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 considerably once wells were drilled and non-working areas were reclaimed and reseeded. Successful and ongoing reclamation of the landscape would quickly support wildlife and livestock grazing, stabilize the soil, and reduce the potential for erosion and sedimentation. The major long-term resource loss corresponds with the project purpose: extraction of hydrocarbons from the Bakken Formation.

### **3.14 Cumulative Impacts**

Environmental impacts may accumulate either over time or in combination with similar events in the area. Unrelated and dissimilar activities may also have negative impacts on critical elements, thereby contributing to the cumulative degradation of the environment. Past and current disturbances in the vicinity of the project areas include farming, grazing, roads, and other oil and gas wells. Reasonably foreseeable future impacts must also be considered. Should development of these wells prove productive, it is likely that Zenergy and possibly other operators would pursue additional development in the area. Current farming and ranching is expected to continue with little change because virtually all available acreage is already organized into range units to use surface resources for economic benefit. Undivided interests in the land surface, range permits, and agricultural leases are often held by tribal members other than those holding mineral rights; oil and gas development is not expected to have more than a minor effect on land use patterns.

Figure 3.14 shows active, confidential, and permitted wells within a 1-, 5-, 10-, and 20-mile radius of the project area. When this EA was prepared, approximately 260 oil and gas wells had been staked within the Reservation (D. Turcotte, BIA Natural Resources Officer, personal communication with Josh Ruffo, SWCA, July 13, 2009). Tables 3.14a through 3.14d summarize the number of confidential, active, and dry wells within a radius of 1, 5, 10, and 20 miles of the project areas, respectively. The nearest active, confidential, dry, and water wells to each proposed project site are listed in Table 3.14e.

Current impacts from oil and gas-related activities are still fairly dispersed, and the required BMPs would constrain proposed impacts. No significant negative impacts would be expected to any critical element of the human environment; impacts would generally be low and mostly temporary. Should these wells prove productive, the proposed project may share its access roads with other actual or proposed wells.

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Zenergy has committed to conducting interim reclamation of the roads and well pads immediately following construction and completion. Implementation of both interim and permanent reclamation measures would decrease the magnitude of cumulative impacts.

Commercial success at the proposed sites may result in additional oil and gas exploration proposals, but such developments remain speculative at this time. Additional cumulative impact analyses and BIA approvals would be required before the surface is disturbed at any other location. No significant cumulative impacts are reasonably foreseen from existing and proposed activities, other than increasingly positive impacts to the Reservation economy.

Reasonably foreseeable oil and gas development can be difficult to accurately track as new proposals are being submitted to the BIA on a regular basis. Zenergy has suggested, but not yet formally proposed, that potentially 25 more wells may eventually be drilled in the same general area as these proposed projects, using many of the same main access roads and minimizing the disturbance as much as possible.

**Table 3.14a Confidential, active, and permitted wells within a 1-mile radius of the project areas.**

Reservation (On/Off)	Mandan #3-13H		Brugh #15-32H		TAT (694A) #3-11H		Clara #14-17H	
	On	Off	On	Off	On	Off	On	Off
<b>Confidential Wells</b>	0	-	1	-	0	-	0	-
<b>Active Wells</b>	0	-	0	-	0	-	0	-
<b>Per mitted Wells</b>	0	-	0	-	0	-	0	-

**Table 3.14b Confidential, active, and permitted wells within a 5-mile radius of the project areas.**

Reservation (On/Off)	Mandan #3-13H		Brugh #15-32H		TAT (694A) #3-11H		Clara #14-17H	
	On	Off	On	Off	On	Off	On	Off
<b>Confidential Wells</b>	10	0	2	1	7	0	9	0
<b>Active Wells</b>	4	0	4	0	4	0	3	0
<b>Permitted Wells</b>	0	0	0	0	0	0	0	0

**Table 3.14c Confidential, active, and permitted wells within a 10-mile radius of the project areas.**

Reservation (On/ Off)	Mandan #3-13H		Brugh #15-32H		TAT (694A) #3-11H		Clara #14-17H	
	On	Off	On	Off	On	Off	On	Off
<b>Confidential Wells</b>	14	0	12	18	11	10	14	2
<b>Active Wells</b>	5	0	4	36	9	13	8	3
<b>Permitted Wells</b>	0	0	0	0	0	0	0	0

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**Table 3.14d Confidential, active, and permitted wells within a 20-mile radius of the project areas.**

	Mandan #3-13H		Brugh #15-32H		TAT (694A) #3-11H		Clara #14-17H	
Reservation (On/Off)	On	Off	On	Off	On	Off	On	Off
<b>Confidential Wells</b>	<b>35</b>	<b>44</b>	<b>22</b>	<b>67</b>	<b>25</b>	<b>57</b>	<b>22</b>	<b>48</b>
<b>Active Wells</b>	<b>53</b>	<b>120</b>	<b>14</b>	<b>192</b>	<b>22</b>	<b>176</b>	<b>19</b>	<b>164</b>
<b>Permitted Wells</b>	<b>14</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>

**Table 3.14e Nearest active, confidential, dry, and water wells to each of the proposed sites.**

Well Type	Mandan #3-13H	Brugh #15-32H	TAT (694A) #3-11H	Clara #14-17H
Active	Ahel et al. Newtown 44-24 H7	BIA Hale 1-7	Calf Women 1-16	Tekakwitha 9-24H
Confidential	Arvid Bangen USA 31-18H	Dakota-3 TAT [714A] 2-1H	Dakota-3 Cross 2-13H	Dakota-3 Nathan Hale 3-18H
Dry	Grace 1-20	BIA-Wolf 1-27	Berg 1	Geolinear Dennis 2- 20
Water (Owner)	Richard Bangen	Not in Data	Mandaree #3 Well	Mary Fox

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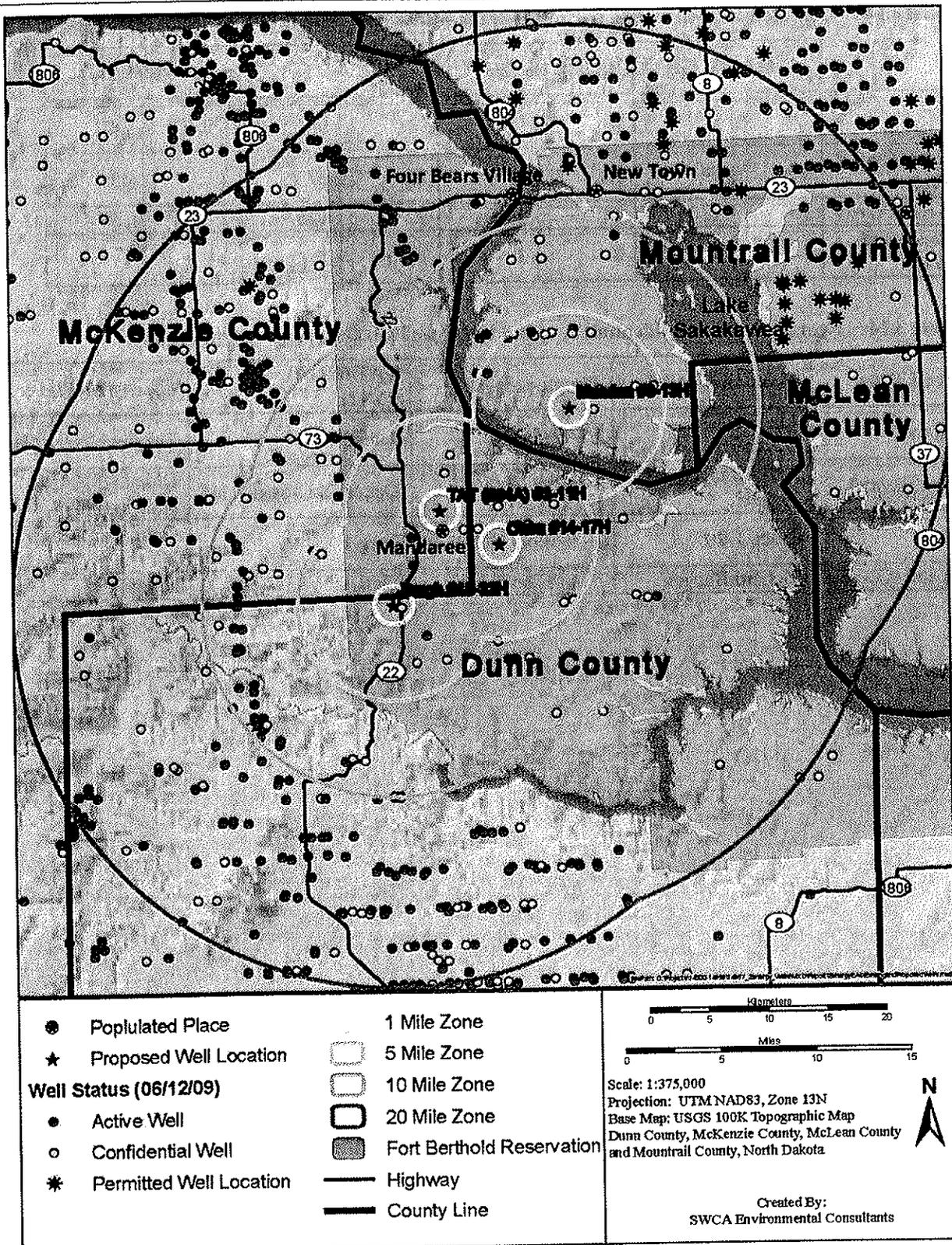


Figure 3.14: Approved or proposed oil and gas projects

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The Proposed Action, when combined with other oil and gas projects, may contribute to the depletion of oil and gas resources in the area if the wells prove to be productive. In addition, construction of well pads and access roads for the Proposed Action combined with the disturbances from future oil and gas projects, road building, and construction of agricultural projects would incrementally alter the topographic character of the area.

It is anticipated that the pace and level of natural gas development within this region of the state will continue at the current rate over the next few years and contribute to cumulative air quality impacts. The Proposed Action would cumulatively contribute to emissions occurring within the region. In general, however, the increase in emissions associated with the Proposed Action—most of which would occur during well construction—would be localized, largely temporary, and limited in comparison with regional emissions. Therefore, it is unlikely that the projects would significantly impact the cumulative air quality of the region.

No surface discharge of water would occur under the Proposed Action, nor would any surface water or groundwater be used during project development. The Proposed Action, when combined with other actions (cattle grazing, other oil and gas development, and agriculture) that are likely to occur in and near the project areas in the future, would increase sedimentation and runoff rates. Sediment yield from active roadways could occur at higher rates than background rates and continue indefinitely. Thus, the Proposed Action could incrementally add to existing and future sources of water quality degradation in the Little Shell Creek, Upper Bear Den Creek, Boggy Creek, and Upper Squaw Creek sub-watersheds, but increases in degradation would be reduced by Zenergy's commitment to minimizing disturbance, using erosion control measures as necessary, and implementing BMPs designed to reduce impacts.

Unlike well pads, active roadways are not typically reclaimed, thus sediment yield from roads can continue at rates two to three times above background rates indefinitely. The Proposed Action would create additional lengths of unpaved roadway in the project areas. Thus, the Proposed Actions would incrementally add to existing and future impacts to soil resources in the general area. However, Zenergy is committed to using BMPs to mitigate these effects. BMPs would include implementing erosion and sedimentation control measures, such as installing culverts with energy dissipating devices at culvert outlets to avoid sedimentation in ditches, constructing water bars along side slopes, planting cover crops to stabilize soil following construction and before permanent seeding takes place, and placing straw bales around the well pads.

Vegetation resources across the project areas could be affected by various activities, including additional energy development and surface disturbance of quality native prairie areas that have been largely undisturbed by development activities, grazing, and agriculture. Indirect impacts to native vegetation also could be a possibility if soil loss and compaction and the increased encroachment of invasive weed species are not managed. Continued oil and gas development within the Reservation could result in the loss, and further fragmentation, of native mixed-grass prairie habitat. Past, present, and reasonably foreseeable future activities within the general area have reduced, and would likely continue to reduce, the amount of available habitat for listed species.

Significant archaeological resources are irreplaceable and often unique; any destruction or damage of such resources can be expected to diminish the archaeological record as a whole. However, no such damage or destruction of significant archaeological resources would be anticipated as a result of the Proposed Action, as these resources would be avoided, negating the cumulative impacts to the archaeological record.

The Proposed Action would incrementally add to existing and future socioeconomic impacts in the general area. The Proposed Action includes four wells, which would be an additional source of revenue for some residents of the Reservation. Increases in employment would be temporary during the construction, drilling, and completion phases of the proposed project. Therefore, little change in employment would be expected over the long term.

*September 2009.*

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Current impacts from oil and gas-related activities are still fairly dispersed, and the required BMPs would limit potential impacts. No significant negative impacts would be expected to affect any critical element of the human environment; impacts would generally be low and mostly temporary. Zenergy has committed to implementing interim reclamation of the roads and well pads immediately following construction and completion. Implementation of both interim and permanent reclamation measures would decrease the magnitude of cumulative impacts.

## **4. Consultation and Coordination**

The Bureau of Indian Affairs has completed many Environmental Assessments (EAs) for the oil and gas projects at Fort Berthold since 2007. For the first 18 of these projects, prior notice was sent to about 60 tribes, government agencies, non-profit organizations and individuals. BIA consulted directly and repeatedly with the U.S. Fish and Wildlife Service to identify issues and incorporate best management practices for wildlife protection. BIA also routinely cooperated on every project with the Bureau of Land Management regarding operational standards and reclamation procedures.

Responses to previous notifications quickly became repetitious, usually consisting of form letters advising BIA that the respondent had no concerns or that the same general concerns applied to every project proposal. BIA has therefore discontinued mailing of individual notices for Fort Berthold oil and gas environmental review, except where proposals include unusual components not previously considered with other interested parties. There are no such components to the proposals analyzed in the EA. BIA is satisfied that the proper scope of analysis for such projects is known.

This justified simplification of NEPA procedures does not impact in any way BIA practices regarding cultural resource regulations and standard practices under the National Historic Preservation Act. Correspondence with the Tribal Historic Preservation Officer is reproduced below.

September 2009.



## United States Department of the Interior

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



IN REPLY REFER TO:  
DESCRM  
MC-208

AUG 25 2009

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 oil well pads and access roads in McKenzie and Mountrail Counties, North Dakota. Approximately 44.08 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the areas depicted in the enclosed reports. One historic farmstead (32MN800) and three isolated finds were recorded in the inventories, however, 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. No properties were located that appear to qualify for protection under the American Indian Religious Freedom Act (16 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-1649/FB/09**, the proposed undertakings, locations, and project dimensions are described in the following reports:

Retter, Michael J., and Karen Reed

(2009) A Cultural Resources Inventory of the Dakota-3 TAT #3-11H Well Pad and Access Road on the Fort Berthold Indian Reservation, McKenzie County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.

(2009) A Cultural Resources Inventory of the Dakota-3 Brugh #15-32H Well Pad on the Fort Berthold Indian Reservation, McKenzie County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.

Retter, Michael J., Karen Reed and Thomas Witt

(2009) A Cultural Resources Inventory of the Dakota-3 Mandan #3-13H Well Pad on the Fort Berthold Indian Reservation, Mountrail County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.

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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  
Chief, Division of Energy and Environment

September 2009.



**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@mhonation.com

September 10, 2009

Carson Murdy  
Regional Archeologist  
Bureau of Indian Affairs  
Great Plains Regional Office  
115 Fourth Avenue SE  
Aberdeen, SD, 57401

RE: Project # AAO-1649/FB/09  
Dakota 3 TAT 03-11H  
Dakota 3 Brugh 15-32H  
Dakota 3 Mandan 03-13H

Dr. Murdy:

After review of the documentation provided, the Mandan Hidatsa Arikara Nations Tribal Historic Preservation Office concurs 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 issue or others arise as the Project progresses.

Sincerely,

  
Perry 'No Tears' Brady,  
Tribal Historic Preservation Officer,  
Mandan Hidatsa Arikara Nations.

September 2009.



## United States Department of the Interior

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



IN REPLY REFER TO:  
DESCRM  
MC-208

SEP 10 2009

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 an oil well pad and access road in Dunn County, North Dakota. Approximately 10 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the area depicted in the enclosed report. 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. No properties were located that appear to qualify for protection under the American Indian Religious Freedom Act (16 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 this undertaking. Catalogued as **BIA Case Number AAO-1602/FB/09**, the proposed undertaking, location, and project dimensions are described in the following report:

Slessman, Scott A.  
(2009) A Cultural Resource Inventory of the Dakota-3 Clara #14-17H Well Pad and Access Road on the Fort Berthold Indian Reservation, Dunn County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, Oklahoma.

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

September 2009.



**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@mbanation.com

September 11, 2009

Carson Murdy  
Regional Archeologist  
Bureau of Indian Affairs  
Great Plains Regional Office  
115 Fourth Avenue SE  
Aberdeen, SD, 57401

RE: Project # AAO-1602/FB/09  
Dakota 3 Clara 14-17H well pad and access road

Dr. Murdy:

After review of the documentation provided, the Mandan Hidatsa Arikara Nations Tribal Historic Preservation Office concurs with the determination of 'No Historic Properties Affected' to any pre and post-historic relics, artifacts or sacred and cultural resources in the Project areas.

We respectfully request to be notified should any NAGPRA issue or others arise as the Project progresses.

Sincerely,

  
Perry 'No Tears' Brady,  
Tribal Historic Preservation Officer,  
Mandan Hidatsa Arikara Nations.

**THPO Concurrence letters**

## 5. List of Preparers

An interdisciplinary team contributed to this document, following guidance in Part 1502.6 of CEQ regulations.

- Sarah Ruffo, Environmental Specialist, SWCA Environmental Consultants  
*Prepared Environmental Assessment*
- Joshua Ruffo, Project Manager/Environmental Specialist, SWCA Environmental Consultants  
*Conducted natural resource surveys for well pads and access roads*
- Jon Markman, Archaeologist/Field Coordinator, SWCA Environmental Consultants  
*Conducted cultural resource surveys for well pads and access roads*
- Richard Wadleigh, Senior NEPA Planner, SWCA Environmental Consultants  
*Reviewed Environmental Assessment*
- Stephanie Lechert, Archaeologist, SWCA Environmental Consultants  
*Conducted cultural resource surveys for well pads and access roads*
- Victoria Ross, Archaeologist, SWCA Environmental Consultants  
*Conducted cultural resource surveys for well pads and access roads*
- Joey Sheeley, Planning Specialist, SWCA Environmental Consultants  
*Reviewed Environmental Assessment*
- Amarina Wuenschel, GIS Specialist, SWCA Environmental Consultants  
*Created maps and spatially derived data*
- Brent Sobotka, Hydrologist, SWCA Environmental Consultants  
*Completed Water Resources section*
- Stephen Ross, Environmental Specialist, SWCA Environmental Consultants  
*Conducted natural resource surveys for well pads and access roads*
- Michael J. Retter, Archaeologist, SWCA Environmental Consultants  
*Completed Cultural Resource reports*
- Division of Environmental, Safety and Cultural Resource Management, BIA-GPRO

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*September 2009.*

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## Acronyms

<b>AAQM</b>	Ambient Air Quality Monitoring (site)	<b>NDNH</b>	North Dakota Natural Heritage
<b>AIRFA</b>	American Indian Religious Freedom Act	<b>ND SWC</b>	North Dakota State Water Commission
<b>APD</b>	Application for Permit to Drill	<b>NEPA</b>	National Environmental Policy Act
<b>APE</b>	Area of Potential Affect	<b>NHPA</b>	National Historic Preservation Act
<b>BIA</b>	Bureau of Indian Affairs	<b>NPAL</b>	Northern Plains Agroecosystems Laboratory
<b>BLM</b>	Bureau of Land Management	<b>NRCS</b>	Natural Resources Conservation Service
<b>CFR</b>	Code of Federal Regulations	<b>NRHP</b>	National Register of Historic Places
<b>EA</b>	Environmental Assessment	<b>NTL</b>	Notice to Lessees
<b>EIS</b>	Environmental Impact Statement	<b>SHPO</b>	State Historic Preservation Officer
<b>EPA</b>	Environmental Protection Agency	<b>TCP</b>	Traditional Cultural Property
<b>FONSI</b>	Finding of No Significant Impact	<b>TERO</b>	Tribal Employment Rights Office
<b>GPRO</b>	Great Plains Regional Office	<b>THPO</b>	Tribal Historic Preservation Officer
<b>MHA Nation</b>	Three Affiliated Tribes of the Mandan, Hidatsa and Arikira Nation	<b>TVD</b>	Total Vertical Depth
<b>NAGPRA</b>	Native American Graves Protection and Repatriation Act	<b>USC</b>	United States Code
<b>NDCC</b>	North Dakota Century Code	<b>USFS</b>	U.S. Forest Service
<b>NDDH</b>	North Dakota Department of Health	<b>USFWS</b>	U.S. Fish and Wildlife Service
<b>NDIC</b>	North Dakota Industrial Commission	<b>USGS</b>	U.S. Geological Survey

# **NOTICE OF AVAILABILITY**

**THE BUREAU OF INDIAN AFFAIRS (BIA) AND THE THREE AFFILIATED TRIBES ARE PLANNING ON DRILLING FOUR HORIZONTAL OIL/GAS WELLS ON *Dakota-3 Mandan #3-13H, Dakota-3 Brugh #15-32H, Dakota-3 TAT (694A) #3-11H, and Dakota-3 Clara #14-17H*, ON THE FORT BERTHOLD RESERVATION. CONSTRUCTION IS SCHEDULED TO BEGIN IN THE FALL OF 2009.**

**BASED ON THE ENVIRONMENTAL ASSESSMENT (EA), IT HAS BEEN DETERMINED THAT THE ACTION WILL NOT RESULT IN SIGNIFICANT IMPACTS TO THE QUALITY OF THE HUMAN ENVIRONMENT; THEREFORE, AN ENVIRONMENTAL IMPACT STATEMENT IS NOT REQUIRED.**

**FOR FURTHER INFORMATION OR TO OBTAIN A COPY OF THE FINDING OF NO SIGNIFICANT IMPACT (FONSI) AND EA, CONTACT HOWARD BEMER, SUPERINTENDENT AT THE FORT BERTHOLD AGENCY AT 701-627-4707.**

**THE FONSI IS A FINDING ON ENVIRONMENTAL EFFECTS, NOT A DECISION TO PROCEED WITH AN ACTION, THEREFORE CANNOT BE APPEALED.**