

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

Five Bakken Exploratory Oil Wells:

Dakota-3 Fast Dog #14-5H

Dakota-3 Fettig #3-6H

Dakota-3 Patricia Charging 2 #2-15H

Dakota-3 Pauline Grady #4-19H

Dakota-3 TAT (1800) #2-4H

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

The U.S. Bureau of Indian Affairs (BIA) has received a proposal for five oil/gas wells, access roads and related infrastructure on the Fort Berthold Indian Reservation to be located in SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 5, Township 148 North, Range 94 West, Dunn County; NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 6, T148N, R94W, Dunn County; NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 15, T149N, R93W, Dunn County; NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 19, T149N, R94W, McKenzie County and NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 4, T148N, R93W, Dunn County. 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.

The 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

12-4-2009
Date

ENVIRONMENTAL ASSESSMENT

**United States Department of Interior
Bureau of Indian Affairs**

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

Cooperating Agency:

Bureau of Land Management

**North Dakota State Office
Dickinson, North Dakota**



Zenergy Operating Company, LLC

Five Bakken Formation Exploratory Oil Wells:

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Dakota-3 Fettig #3-6H
Dakota-3 Patricia Charging 2 #2-15H
Dakota-3 Pauline Grady #4-19H
Dakota-3 TAT (1800) #2-4H**

Fort Berthold Indian Reservation

December 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

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1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

Zenergy Operating Company, LLC (Zenergy) has acquired the leases and is proposing to drill five horizontal 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 lands held in trust by the United States in Dunn and McKenzie counties, North Dakota. The 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. Developments have been proposed in locations that target specific areas located in the Middle Bakken Dolomite member of the Bakken Formation, a known oil reserve. The following proposed well sites, shown in Figures 1 through 5, will be located within the Reservation in which the majority of the external boundaries are located above the Bakken Formation.

- **Dakota-3 Fast Dog #14-5H:** SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 5, Township (T) 148 North (N), Range (R) 94 West (W), Dunn County
- **Dakota-3 Fettig #3-6H:** NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 6, T148N, R94W, Dunn County
- **Dakota-3 Patricia Charging 2 #2-15H:** NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 15, T149N, R93W, Dunn County
- **Dakota-3 Pauline Grady #4-19H:** NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 19, T149N, R94W, McKenzie County
- **Dakota-3 TAT (1800) #2-4H:** NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 4, T148N, R93W, Dunn County

Existing access roads will be upgraded and will include a utility corridor; new access roads and utility corridor will be constructed in order to facilitate the construction and operation of each proposed well. Well pads will be constructed to accommodate drilling activities and well operations. Pits constructed for drill cuttings will be used during drilling operations and reclaimed once operations have ceased. Should any of the proposed well sites result in long-term commercial production, supporting facilities may be constructed on site. All components (i.e., roads, well pads, supporting facilities) will be reclaimed upon final abandonment unless formally transferred, with federal approval, to either the BIA or the landowner. The proposed wells are exploratory; should they prove productive, further exploration of surrounding areas is possible. This environmental assessment (EA) addresses the potential impacts associated with the construction, and possible long-term operation, of the above-listed wells and directly related infrastructure and facilities. Further oil and gas exploration and development will require additional National Environmental Policy Act of 1969 (NEPA) analysis and federal actions.

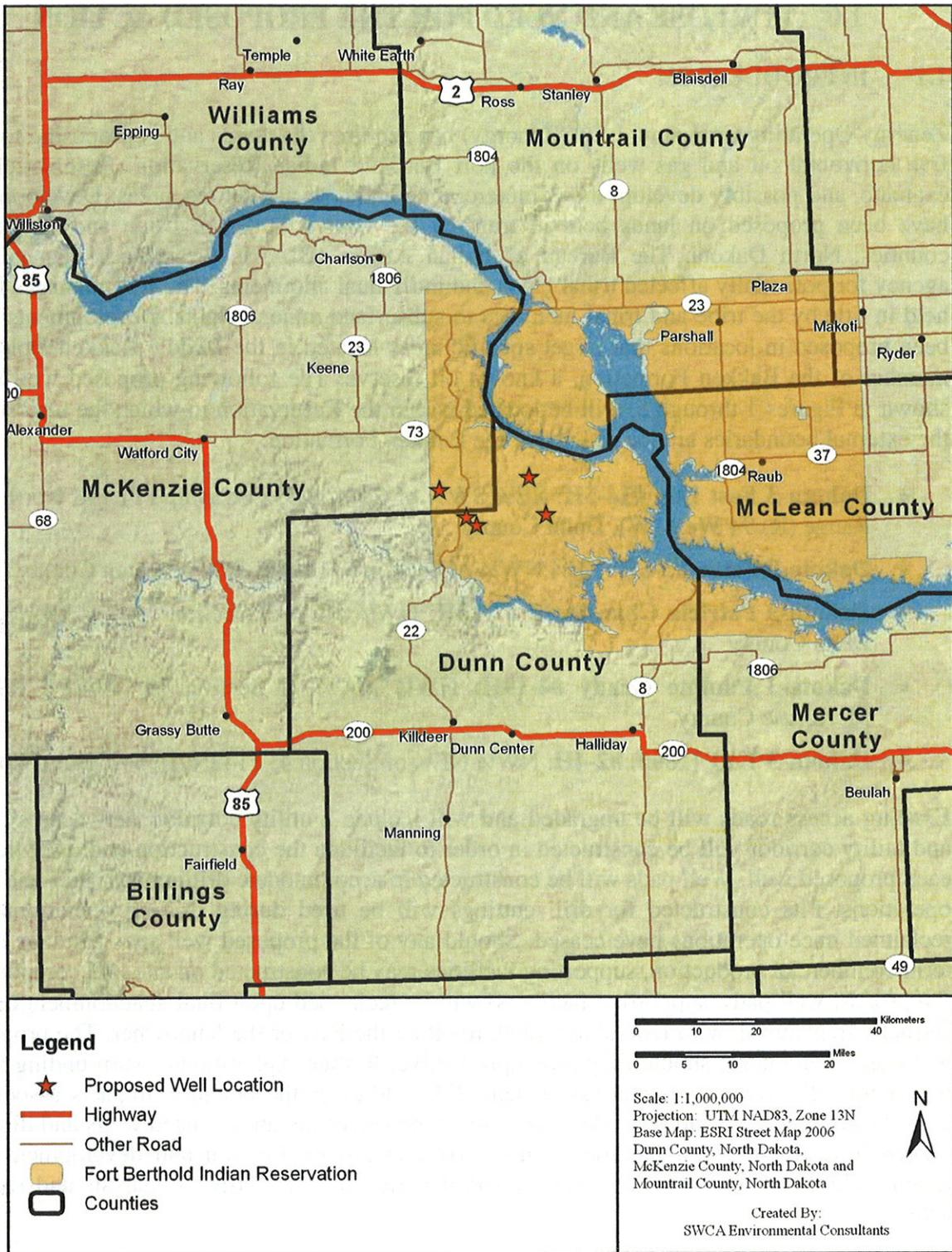


Figure 1. Project locations.

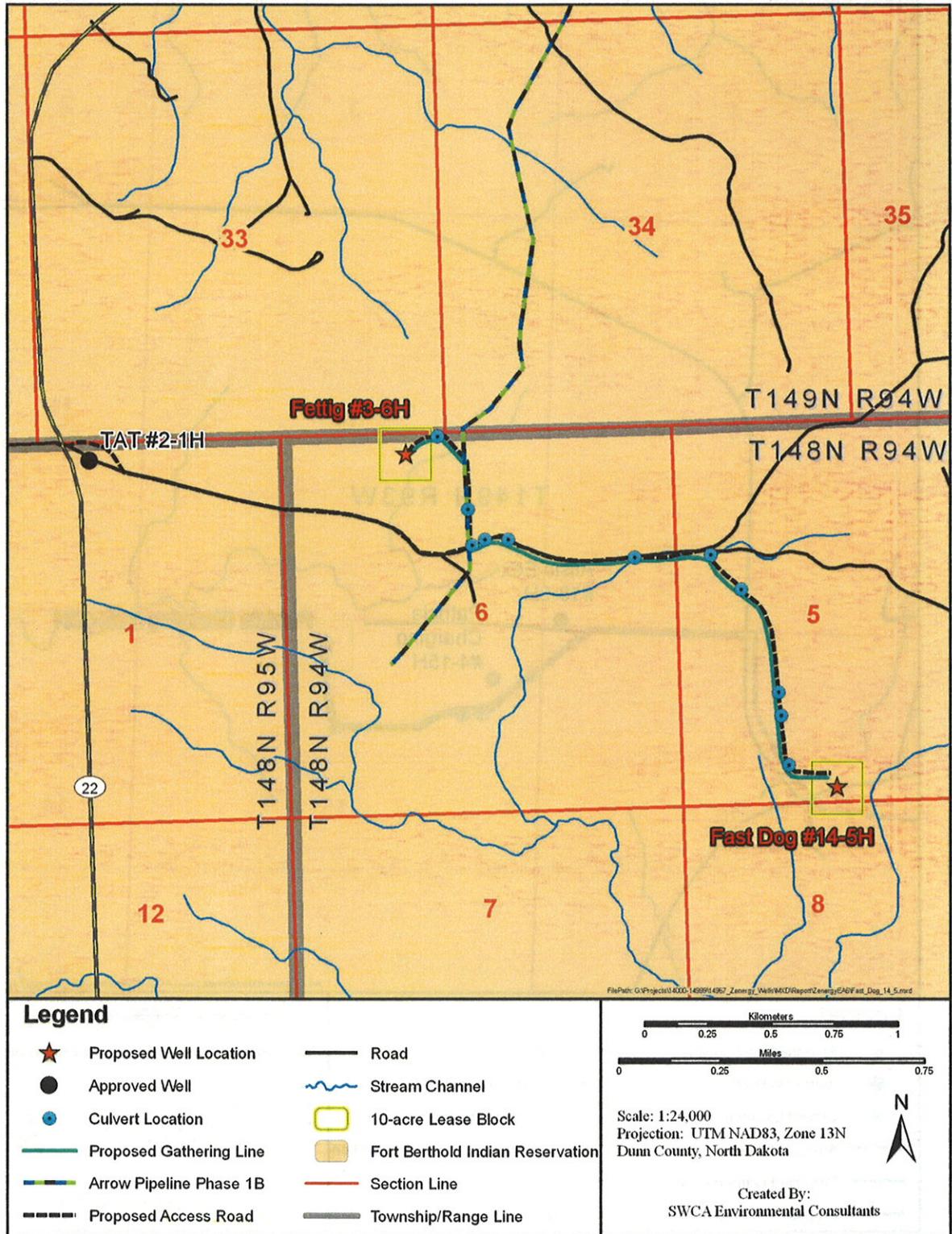


Figure 2. Fast Dog #14-5H and Fettig #3-6H proposed locations.

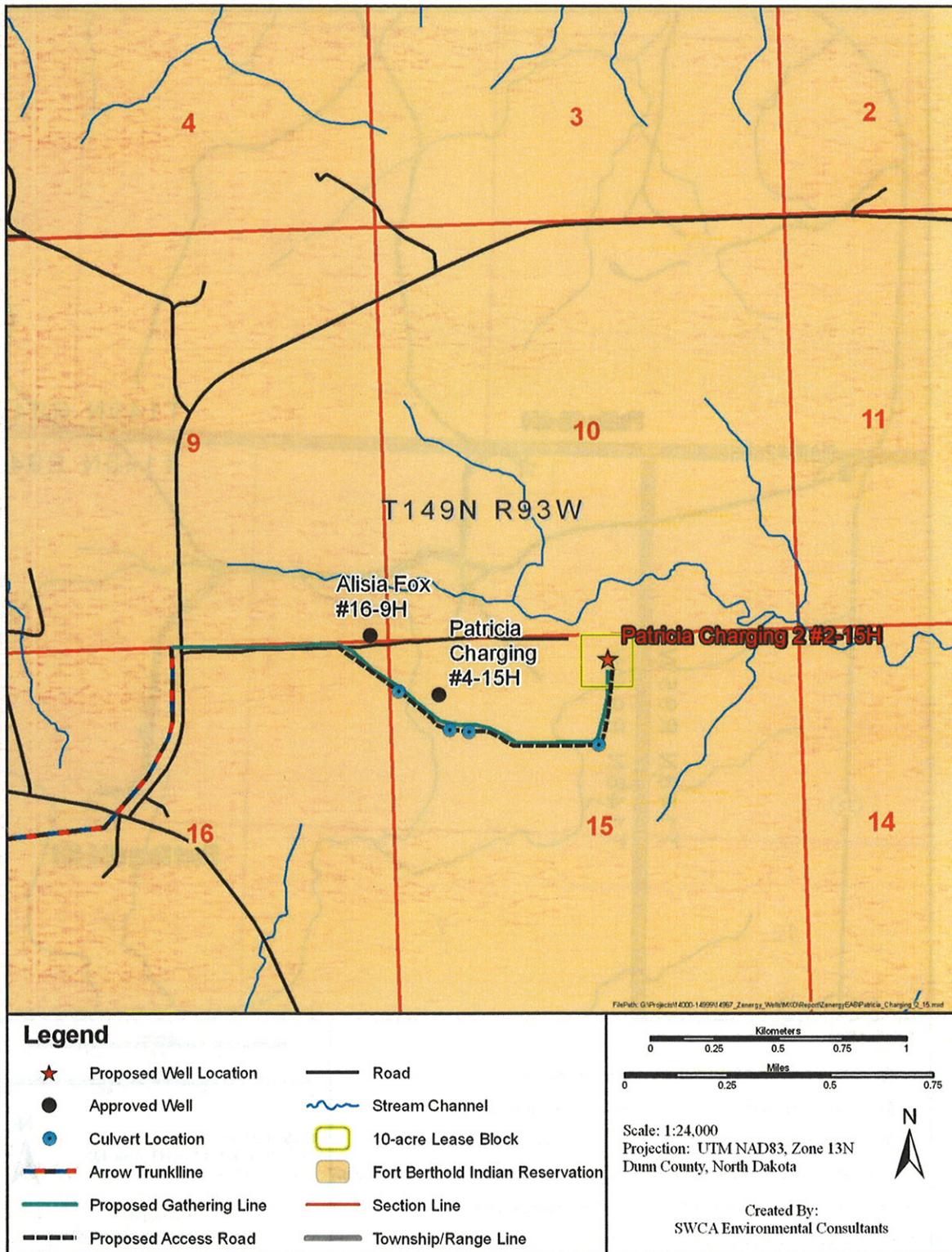


Figure 3. Patricia Charging 2 #2-15H proposed location.

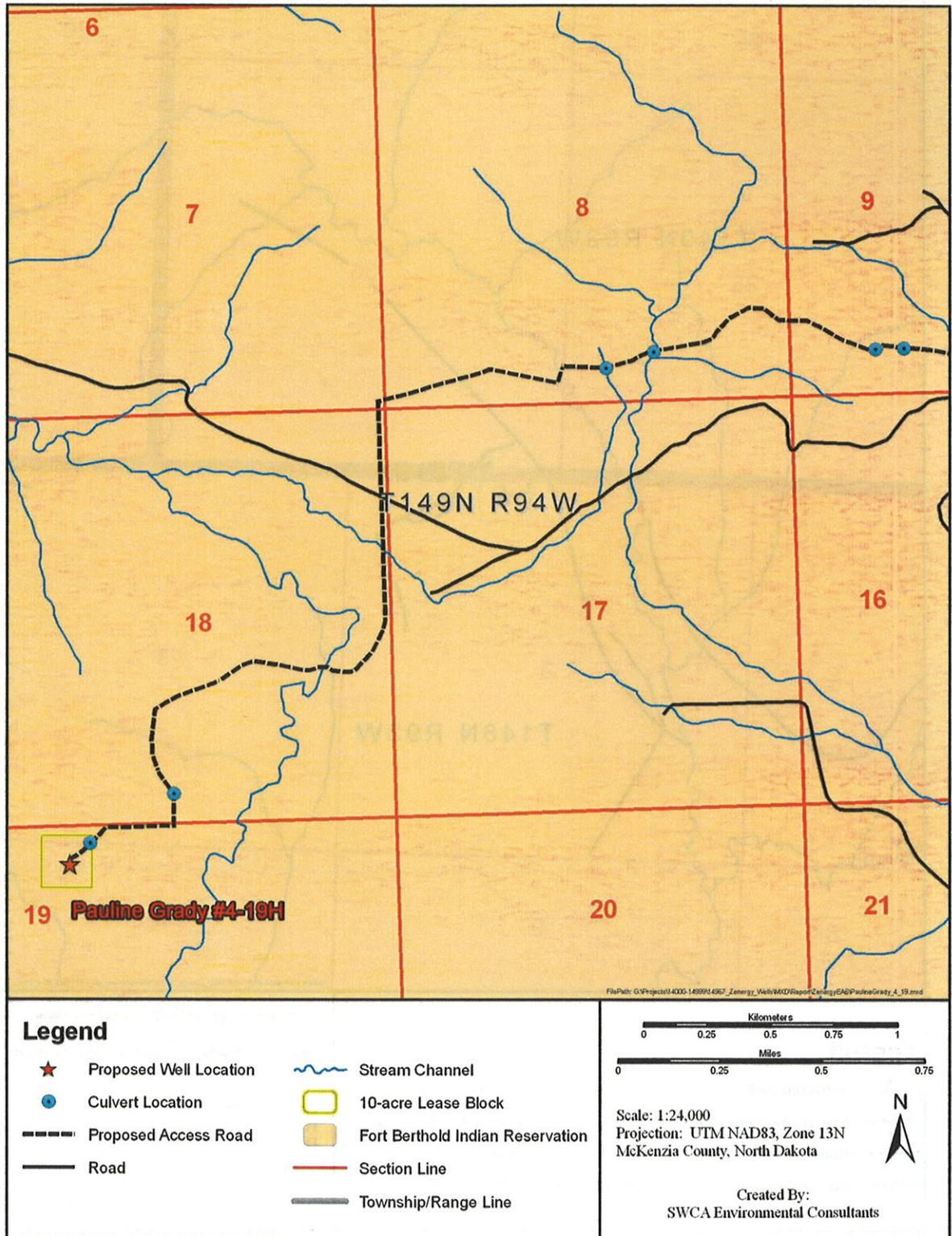


Figure 4. Pauline Grady #4-19H proposed location.

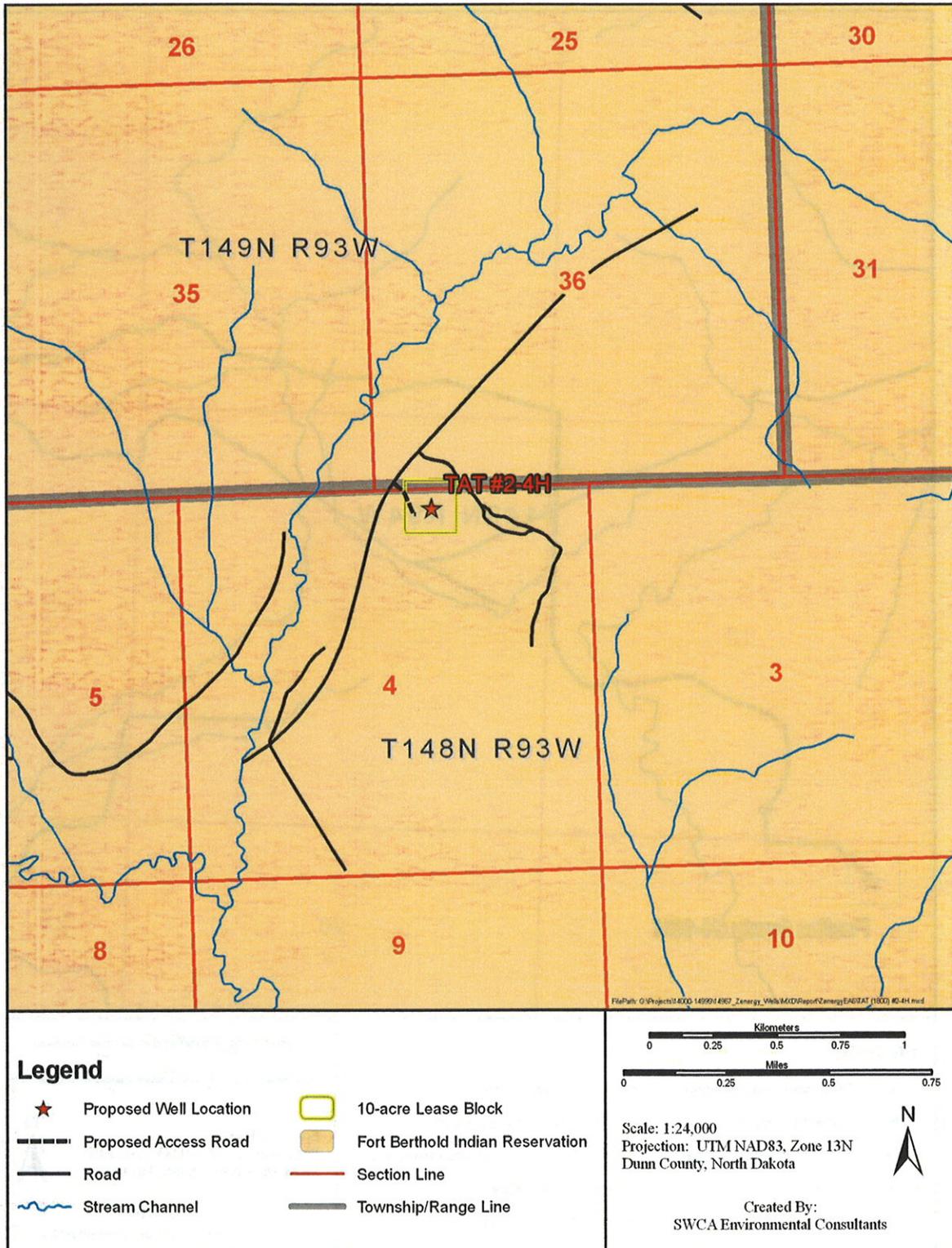


Figure 5. TAT (1800) #2-4H proposed location.

1.2 FEDERAL AND OTHER RELEVANT REGULATIONS AND AUTHORITIES

The BIA's general mission is to represent the interests, including the trust resources, of members of the Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara (MHA) Nation, as well as those of individual tribal members. All members of the MHA Nation, including individual allotment owners, will benefit economically from the development of oil and gas exploration on the Reservation. Oil and gas exploration and subsequent development are under the authority of the Energy Policy Act of 2005 (42 United States Code [USC] 15801, *et seq.*), the Federal Onshore Oil and Gas Royalty Management Act of 1982 (30 USC 1701, *et seq.*), the Indian Mineral Development Act of 1982 (25 USC 2101, *et seq.*), and the Indian Mineral Leasing Act of 1938 (25 USC 396a, *et seq.*). The BIA's role in the proposed projects includes approving easements, leases, and rights-of-way (ROWs); determining effects on cultural resources; and making recommendations to the Bureau of Land Management (BLM).

Compliance with NEPA, the Council on Environmental Quality (CEQ) regulations (Title 40 Code of Federal Regulations [CFR] 1500-1508), 43 CFR 3100, and Onshore Oil and Gas Orders Nos. 1, 2, 6, and 7 are required due to the projects' location on federal lands. The BLM is responsible for the final approval of all Applications for Permit to Drill (APDs) after receiving recommendations for approval from the BIA. The BLM is also tasked with on-site monitoring of construction and production activities as well as resolution of any dispute that may arise as a result of any of the aforementioned actions.

The procedures and technical practices described in the APD supporting documents and in the EA will describe potential impacts to each project area. This EA will result in either a Finding of No Significant Impact or in the preparation of an Environmental Impact Statement (EIS). Commercial viability of the proposed wells could result in additional exploration in the area. Should future oil/gas exploration activities be proposed wholly or partly on trust land, those proposals and associated federal actions would require additional NEPA analysis and BIA consideration prior to implementation and/or production activities.

Zenergy will comply with all applicable federal, state, and tribal laws, rules, policies, regulations, and agreements. No disturbance of any kind can begin until all required clearances, consultations, determinations, easements, leases, permits, and surveys are in place.

2.0 PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

The BIA, as directed by the NEPA, must “study, develop, and describe appropriate alternatives to the recommended course of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources...” (NEPA Sec. 102[2][e]). Developing a range of alternatives allows for exploration of options designed to meet the purpose and need for the action. Along with the No Action Alternative, BIA is considering the Proposed Action.

2.1 THE NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed projects, including well pads, wells, and access roads, would not be constructed, drilled, installed, or operated. The BIA would not approve easements, leases, or ROWs for the proposed locations and the BLM would not approve the APDs. No impacts would occur as a result of these projects to 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, socioeconomic conditions, and environmental justice. There would be no project-related ground disturbances, use of hazardous materials, or trucking of product to collection areas. Surface disturbances, deposition of potentially harmful biological material, and traffic levels 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 recovery of resources at these well locations.

2.2 THE PROPOSED ACTION

This document analyzes the potential impacts of five exploratory oil and gas wells with varied surface and mineral estates located in the west-central portions of the Reservation in Dunn and McKenzie counties. Sites were chosen by Zenergy in consultation with tribal and BIA resource managers to provide information for future development. Well site locations underwent a pre-clearance process that included surveys for cultural, archaeological, and natural (i.e., biological and physical) resources. The proposed wells would test the commercial potential of the Middle Bakken Dolomite member of the Bakken Formation.

2.2.1 Field Camps

A few personnel would be housed in self-contained trailers for a very short period of time. Long-term housing is not being proposed. Most personnel, both construction and drilling, would commute to the site. Human waste would be collected on site in portable toilets and trailers and it would be transported off site to a state-approved wastewater treatment facility. All other solid waste would be contained in enclosed containers and transported to, and disposed of at, state-approved facilities.

2.2.2 Access Roads and Utility Corridors

2.2.2.1 Access Roads

Up to 29,786 feet (i.e., 5.64 miles) of new access roads would be constructed and 7,392 feet (i.e., 1.4 miles) of existing access roads would be upgraded or improved. A maximum disturbed ROW width of 66 feet for each access road would result in up to 47.8 acres of new surface disturbance. Signed agreements would be in place allowing road construction across affected private and allotted land surfaces, and any applicable approach permits and/or easements would be obtained prior to any construction activity.

Construction would follow road design standards outlined in the BLM *Gold Book* (BLM and U.S. Forest Service [USFS] 2007). At a minimum, 6 inches of topsoil would be removed from the access road corridors. This stockpiled topsoil would then be placed on the outside slopes of the ditches following road construction. The ditches would be reseeded as quickly as possible using a seed mixture determined by the BIA. Care would be taken during road construction to avoid disturbing or disrupting any buried utilities that may exist along Highway 22, BIA Roads 10, 12, 14, and 17, BIA Route 30, and 22nd Street NW. If a site were to be established as a commercial production site, the access roads would be surfaced with a minimum of 4 inches of aggregate. Also, the roadway would remain in use for the life of the well(s). Details of road construction are addressed in the APDs. A diagram of typical road cross sections is shown in Figure 6.

2.2.2.2 Utility Corridors

Zenergy plans to construct oil, produced water, and gas gathering lines from the well sites to tie-in points on the Arrow Midstream Holdings, LLC gathering system. In accordance with the BLM *Gold Book* and Best Management Practices (BMPs), Zenergy would co-locate the gathering lines along proposed and existing access roads, wherever possible, to reduce overall disturbance. In addition to the construction practices described in Section 2.2.2.1 *Access Roads*, Zenergy would also:

- avoid constructing gathering lines on steep hillsides or in water courses;
- avoid blocking or changing the natural course of any drainage;
- bury the gathering lines at least 4 feet below the bottom of any channel that is crossed;
- test the gathering lines prior to backfilling the trenches;
- compact the trenches during backfilling and then heaped to mitigate settling; and
- recontour any cut-and-fill slopes.

Please see Section 2.2.8 *Construction Details at Individual Sites* for more information on gathering line construction.

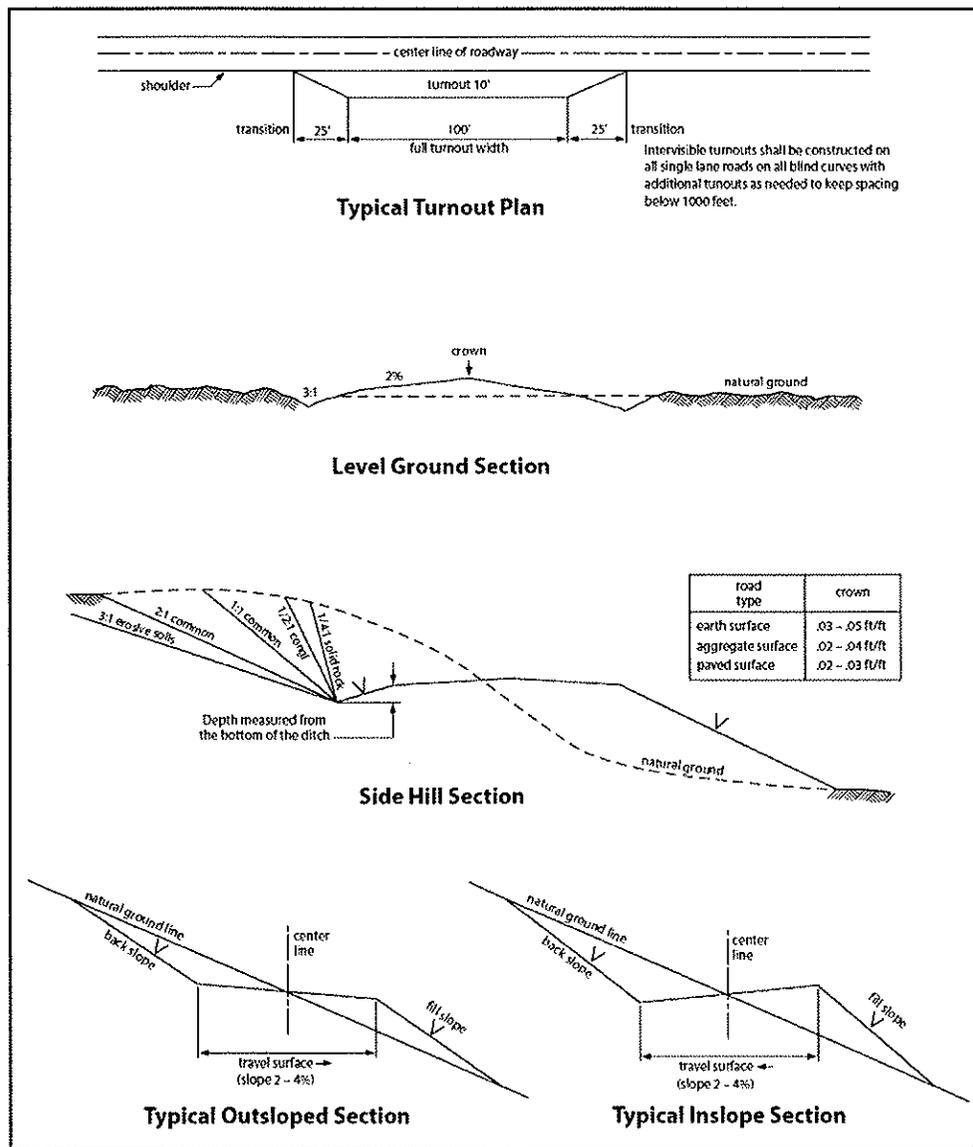


Figure 6. Typical road cross sections (BLM and USFS 2007).

2.2.3 Well Pads

The proposed well pads would each include a leveled area (pad) and a pit. The pad would be used for the drilling rig and equipment and the pit would be excavated, lined, and used for drilling fluids and cuttings. The pad would be stripped of topsoil and vegetation and then graded. The topsoil would be stockpiled and stabilized with a cover crop until it could be used to reclaim and re-vegetate the disturbed area. The subsoil would be used in the construction of the pad and the finished pad would be graded to ensure that water drains away from the pad. Erosion control BMPs would be implemented and could include surface drainage controls, soil surface protection methodologies, and sediment capture features.

The well pads average approximately 430 by 330 feet in size (3.3 acres per well pad). Cut-and-fill slopes, stockpiled topsoil, and reserve pit backfill placed on the edge of the pad would result in approximately 0.4 acre of additional surface disturbance per pad. Total surface disturbance would average approximately 3.7 acres per well pad and would total 24.3 acres. Details of pad construction and reclamation can be found in the APDs.

2.2.4 Drilling

After securing mineral leases, Zenergy submitted the Notices of Staking to the BLM on the following dates.

- Dakota-3 Fast Dog #14-5H: November 14, 2009
- Dakota-3 Fettig #3-6H: August 25, 2009
- Dakota-3 Patricia Charging 2 #2-15H: August 25, 2009
- Dakota-3 Pauline Grady #4-19H: August 25, 2009
- Dakota-3 TAT (1800) #2-4H: December 15, 2008

The BIA's office in New Town, North Dakota, received copies of the APDs from the BLM North Dakota Field Office. Construction will begin when the BIA completes the NEPA process and the APDs are then approved by the BLM.

Rig transport and on-site assembly would take roughly seven days for each well; a typical drill rig is shown in Figure 7. 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 of hole drilled.

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 4,720 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.



Figure 7. Typical drilling rig.

2.2.5 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 each project area. The Fox Hills Formation and Pierre Formation would be encountered at depths of approximately 1,700 and 1,800 feet, respectively. Production casing would be cemented from approximately 11,256 feet deep to a depth of about 4,000 feet in order to isolate the hydrocarbon zone present in the Dakota Formation below a depth of 4,500 feet. Casing and cementing operations would be conducted in full compliance with Onshore Oil and Gas Order No. 2 (43 CFR 3160).

2.2.6 Completion Activities

A completion rig unit would be moved on site following the conclusion of drilling and casing activities. Approximately 30 days are usually required, at the proposed well depths, 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. The typical procedure for fracturing a target formation to increase production includes pumping a mixture of sand and a carrier (e.g., water and/or nitrogen) downhole under extreme pressure. The resulting fractures are propped open by the sand, increasing the capture zone of the well and subsequently maximizing the efficient drainage of the field. After fracturing, the well is “flowed back” to the surface where fracture fluids are recovered and disposed of in accordance with North Dakota Industrial Commission (NDIC) rules and regulations.

2.2.7 Commercial Production

2.2.7.1 Fast Dog #14-5H, Fettig #3-6H, Patricia Charging 2 #2-15H, Pauline Grady #4-19H, TAT (1800) #2-4H

If drilling, testing, and production support commercial production from any of the five proposed locations, additional equipment would be installed, including a pumping unit at the well head, a vertical heater/treater, and a flare pit (Figure 8). For all above-ground facilities not subject to safety requirements, the BIA would choose a paint color, recommended by the BLM or the Rocky Mountain Five-State Interagency Committee, which would blend with the natural color of the landscape. Commercial production would be discussed more fully in subsequent NEPA analyses.



Figure 8. Typical producing oil well pad (Sobotka 2008).

The duration of production operations cannot be reliably predicted, but some oil wells have pumped for more than 100 years. The operator estimates that each well would yield approximately 500 barrels of oil per day and 100 barrels of water during the first year of production. After the first year, the operator estimates production would decrease to approximately 300 barrels of oil per day and 45 barrels of water. Produced water is mostly recovered frac fluids and is expected to become minimal after two years.

2.2.7.2 Pauline Grady #4-19H, TAT (1800) #2-4H

Tanks (usually 400-barrel steel tanks) would be installed at the Pauline Grady #4-19H and TAT #2-4H locations until gathering lines can be installed from the well head to an available gathering system. This document does not address the potential of gathering lines for these two wells; in the future, Zenergy may apply for ROWs for oil, gas, and water pipelines, which would likely be located within existing disturbances along access and arterial roads. This EA does not address the impacts of construction or operation of such ancillary developments for these two locations.

An impervious dike sized to hold 100% of the capacity of the largest tank plus one full day's production would surround the tanks and the heater/treater. Load out lines would be located inside the diked area and a heavy screen-covered drip barrel would be installed under the outlet. A metal access staircase would protect the dike and support flexible hoses used by tanker trucks.

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

Large volumes of gas are not expected from these locations. Small volumes would be flared in accordance with Notice to Lessees 4A and adopted NDIC regulations, which prohibit unrestricted flaring for more than the initial year of operation (North Dakota Century Code 38-08-06.4).

2.2.7.3 Fast Dog #14-5H, Fettig #3-6H, and Patricia Charging 2 #2-15H

For information on the product transportation system (gathering lines) for the Fast Dog #14-5H, Fettig #3-6H, and Patricia Charging 2 #2-15H, please see Section 2.2.8 *Construction Details at Individual Sites* below.

2.2.8 Construction Details at Individual Sites

2.2.8.1 Fast Dog #4-5H

The proposed Fast Dog #4-5H well site, shown in Figure 9, is located approximately 4.7 miles south of Mandaree in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 5, T148N, R94W, Dunn County, North Dakota. A new access road and utility corridor approximately 6,864 feet long would be constructed from the well site to an existing access road. The existing access (5,808 feet) would be upgraded and would also include a utility corridor and would connect to BIA Route 30 (Figures 10 and 11). The new road and corridor would disturb approximately 10.2 acres, the existing road would disturb approximately 8.8 acres, and the proposed well pad would disturb approximately 3.6 acres; the total anticipated new disturbance would be 22.6 acres. Gathering lines placed in the utility corridor would include 6-inch oil, 4-inch produced water, and 6-inch gas lines. The gathering lines would tie into Phase 1B of the Arrow gathering system (Figure 7).

The spacing unit consists of 320 acres (+/-) with the bottom hole located in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 5, T148N, R94W (Figure 11). Vertical drilling would be completed at approximately 9,500 feet, at which point drilling would turn roughly horizontal to an approximate total vertical depth (TVD) of 10,050 feet. The drill string would total approximately 14,850 feet at the TVD, including approximately 4,500 to 5,000 feet of lateral reach into the Middle Bakken Formation. The drilling target is located about 550 feet from the north line (FNL) and 550 feet from the west line (FWL), approximately 4,264 feet northwest of the surface hole location. A setback of at least 500 feet would be maintained.



Figure 9. Fast Dog #4-5H well pad area, looking east from center stake.



Figure 10. Fast Dog #4-5H access road, looking south.

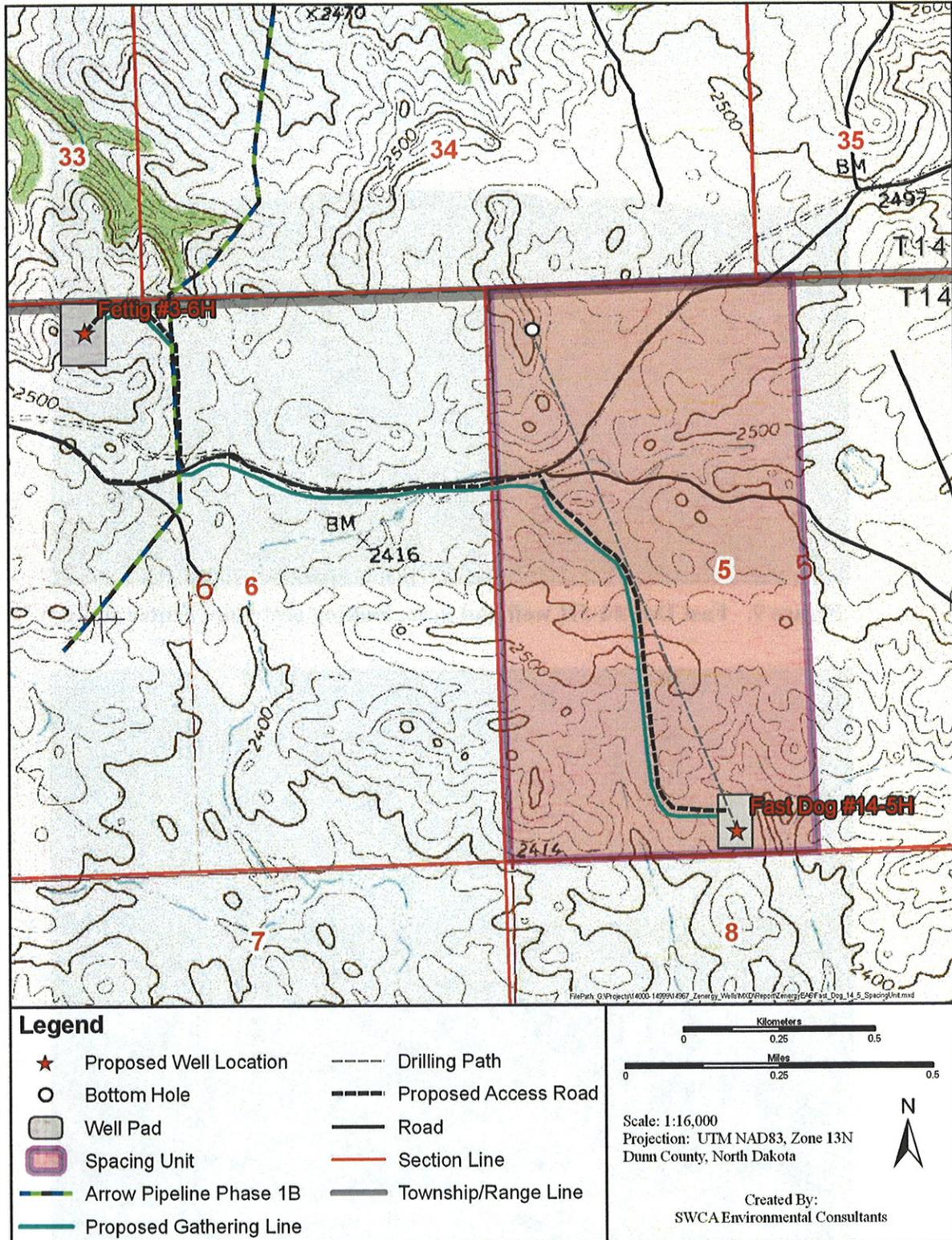


Figure 11. Fast Dog #4-5H proposed location showing spacing unit and drilling target.

2.2.8.2 Fettig #3-6H

The proposed Fettig #3-6H well site, shown in Figure 12, is located approximately 4.2 miles south of Mandaree in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 6, T148N, R94W, Dunn County, North Dakota. A new access road and utility corridor approximately 1,320 feet long would be constructed to connect to BIA Route 30 (Figures 13 and 14). The new road and corridor would disturb approximately 3.3 acres; the proposed well pad would disturb approximately 3.6 acres, bringing the total anticipated disturbance to 6.9 acres. Gathering lines placed in the utility corridor would include 6-inch oil, 4-inch produced water, and 6-inch gas lines. The gathering lines would tie into Phase 1B of the Arrow gathering system (Figure 14).

The spacing unit consists of 640 acres (+/-) with the bottom hole located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 6, T148N, R94W (Figure 10). Vertical drilling would be completed at approximately 9,500 feet, at which point drilling would turn roughly horizontal to an approximate TVD of 10,050 feet. The drill string would total approximately 14,850 feet at the TMD, including approximately 4,500 to 5,000 feet of lateral reach into the Middle Bakken Formation. The drilling target is located about 550 feet from the south line (FSL) and 550 feet from the east line (FEL), approximately 5,012 feet southeast of the surface hole location. A setback of at least 500 feet would be maintained.

2.2.8.3 Patricia Charging 2 #2-15H

The proposed Patricia Charging 2 #2-15H well site, shown in Figure 15, is located approximately 5.0 miles east of Mandaree in the NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 15, T149N, R93W, Dunn County, North Dakota. A new access road approximately 3,168 feet long would be constructed to connect to 22nd Street NW (Figures 16 and 17). The new road would disturb approximately 5.9 acres; the proposed well pad would disturb approximately 3.7 acres, bringing the total anticipated new disturbance to 9.6 acres. Gathering lines placed in the utility corridor would include 6-inch oil, 4-inch produced water, and 6-inch gas lines. The gathering lines would tie into the trunk line on the Arrow gathering system (Figure 17).

The spacing unit consists of 320 acres (+/-) with the bottom hole located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 15, T149N, R93W (Figure 13). Vertical drilling would be completed at approximately 9,413 feet, at which point drilling would turn roughly horizontal to an approximate TVD of 9,963 feet. The drill string would total approximately 14,763 feet at the TMD, including approximately 4,500 to 5,000 feet of lateral reach into the Middle Bakken Formation. The drilling target is located about 550 feet FSL and 550 feet FEL, approximately 4,806 feet southeast of the surface hole location. A setback of at least 500 feet would be maintained.



Figure 12. Fettig #3-6H well pad area, looking west.



Figure 13. Fettig #3-6H access road, looking north-northwest.

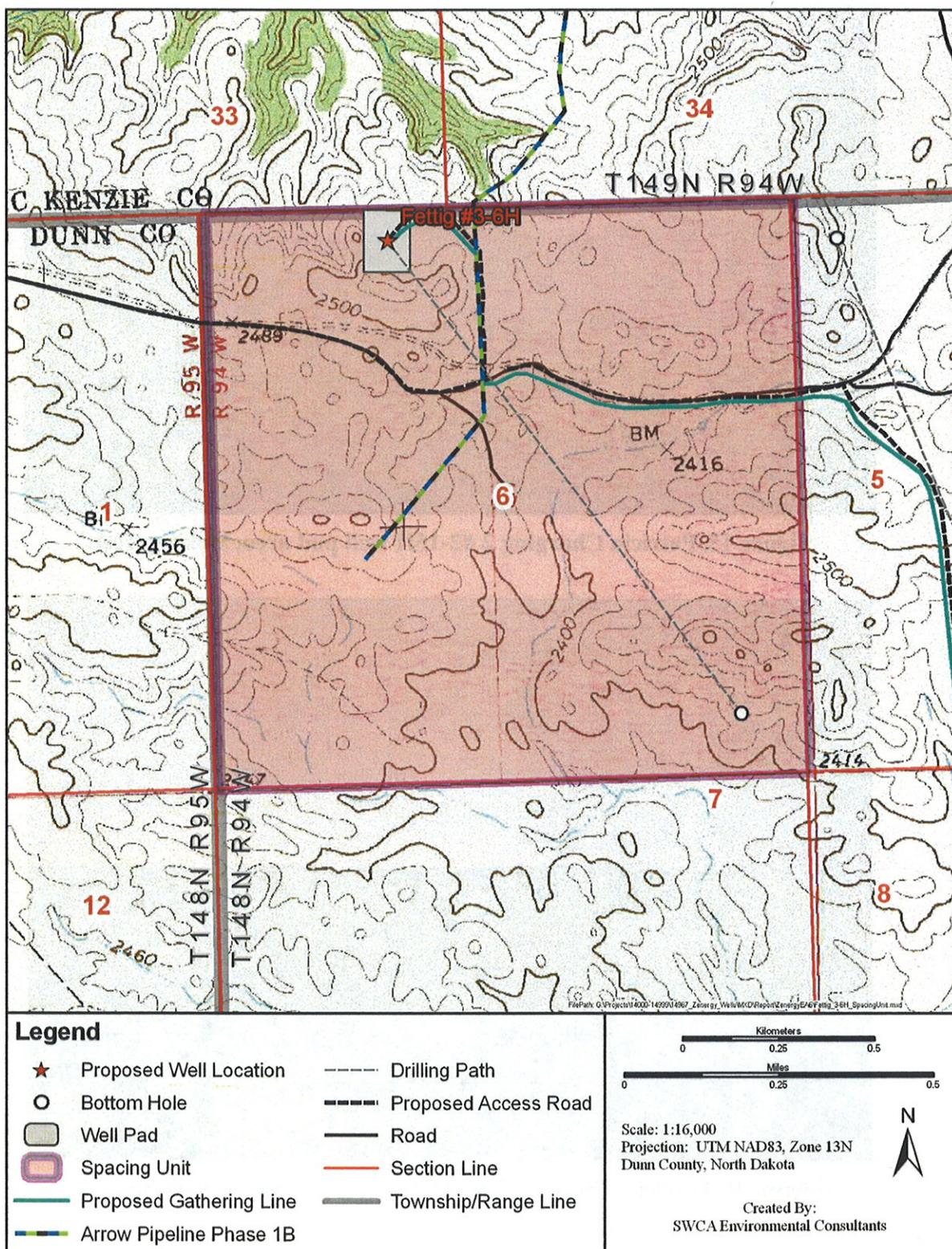


Figure 14. Fettig #3-6H proposed location showing spacing unit and drilling target.

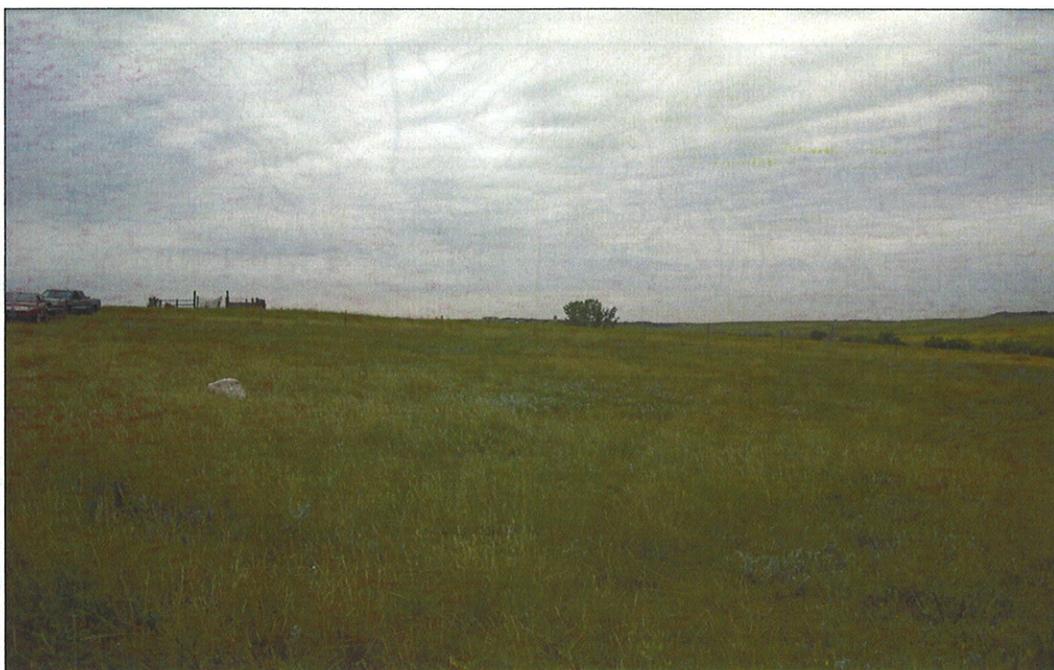


Figure 15. Patricia Charging 2 #2-15H well pad area, looking west.



Figure 16. Patricia Charging 2 #2-15H access road area, looking east.

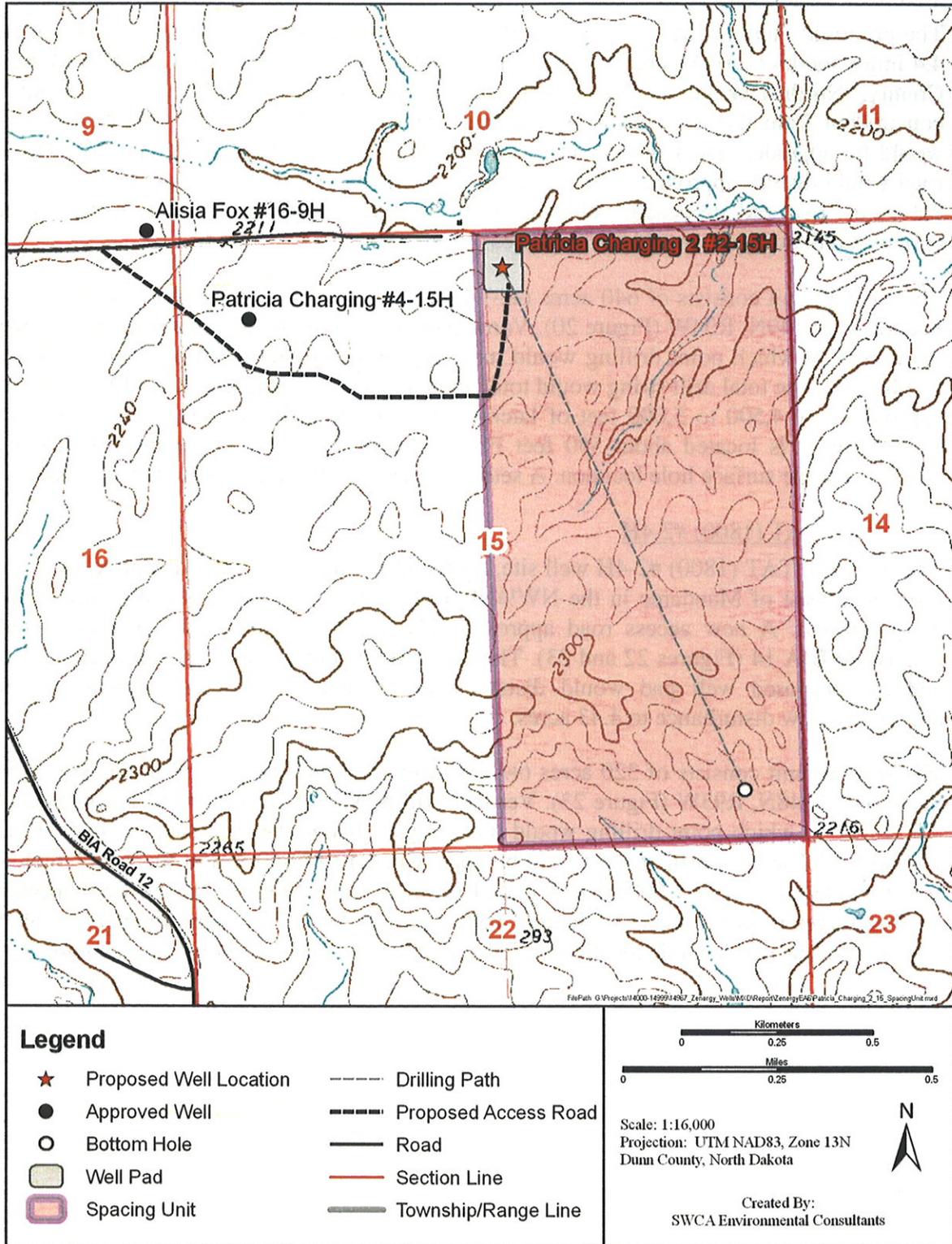


Figure 17. Patricia Charging 2 #2-15H proposed location showing spacing unit and drilling target.

2.2.8.4 Pauline Grady #4-19H

The proposed Pauline Grady #4-19H well site, shown in Figure 18, is located approximately 4.4 miles southwest of Mandaree in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 19, T149N, R94W, McKenzie County, North Dakota. A new access road approximately 17,952 feet long would be constructed from the well site to an existing access road. The existing access (1,584 feet) would be upgraded and would connect to State Highway 22 (Figures 19 and 20). The new road would disturb approximately 27.5 acres, the existing access road upgrade would disturb 2.4 acres, and the proposed well pad would disturb approximately 3.7 acres; the total anticipated disturbance would be 33.6 acres.

The spacing unit consists of 640 acres (+/-) with the bottom hole located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 19, T149N, R94W (Figure 20). Vertical drilling would be completed at approximately 9,450 feet, at which point drilling would turn roughly horizontal to an approximate TVD of 10,000 feet. The total drill string would total approximately 14,800 feet at the TMD, including approximately 4,500 to 5,000 feet of lateral reach into the Middle Bakken Formation. The drilling target is located about 550 feet FSL and 550 feet FEL, approximately 5,618 feet southeast of the surface hole location. A setback of at least 500 feet would be maintained.

2.2.8.5 TAT (1800) #2-4H

The proposed TAT (1800) #2-4H well site, shown in Figure 21, is located approximately 7.75 miles southeast of Mandaree in the NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 4, T148N, R93W, Dunn County, North Dakota. A new access road approximately 482 feet long would be constructed to connect to BIA 14 (Figures 22 and 23). The new road would disturb approximately 0.73 acre and the proposed well pad would disturb approximately 3.70 acres, bringing the total anticipated new disturbance to 4.43 acres.

The spacing unit consists of 320 acres (+/-) with the bottom hole located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 4, T148N, R93W (Figure 23). Vertical drilling would be completed at approximately 9,500 feet, at which point drilling would turn roughly horizontal to an approximate TVD of 10,050 feet. The total drill string would be approximately 14,850 feet at the TMD, including approximately 4,500 to 5,000 feet of lateral reach into the Middle Bakken Formation. The drilling target is located about 550 feet FSL and 550 feet FEL, approximately 4,389 feet southeast of the surface hole location. A setback of at least 500 feet would be maintained.



Figure 18. Pauline Grady #4-19H well pad area, looking east.



Figure 19. Pauline Grady #4-19H access road area, looking south toward the center of the well pad.

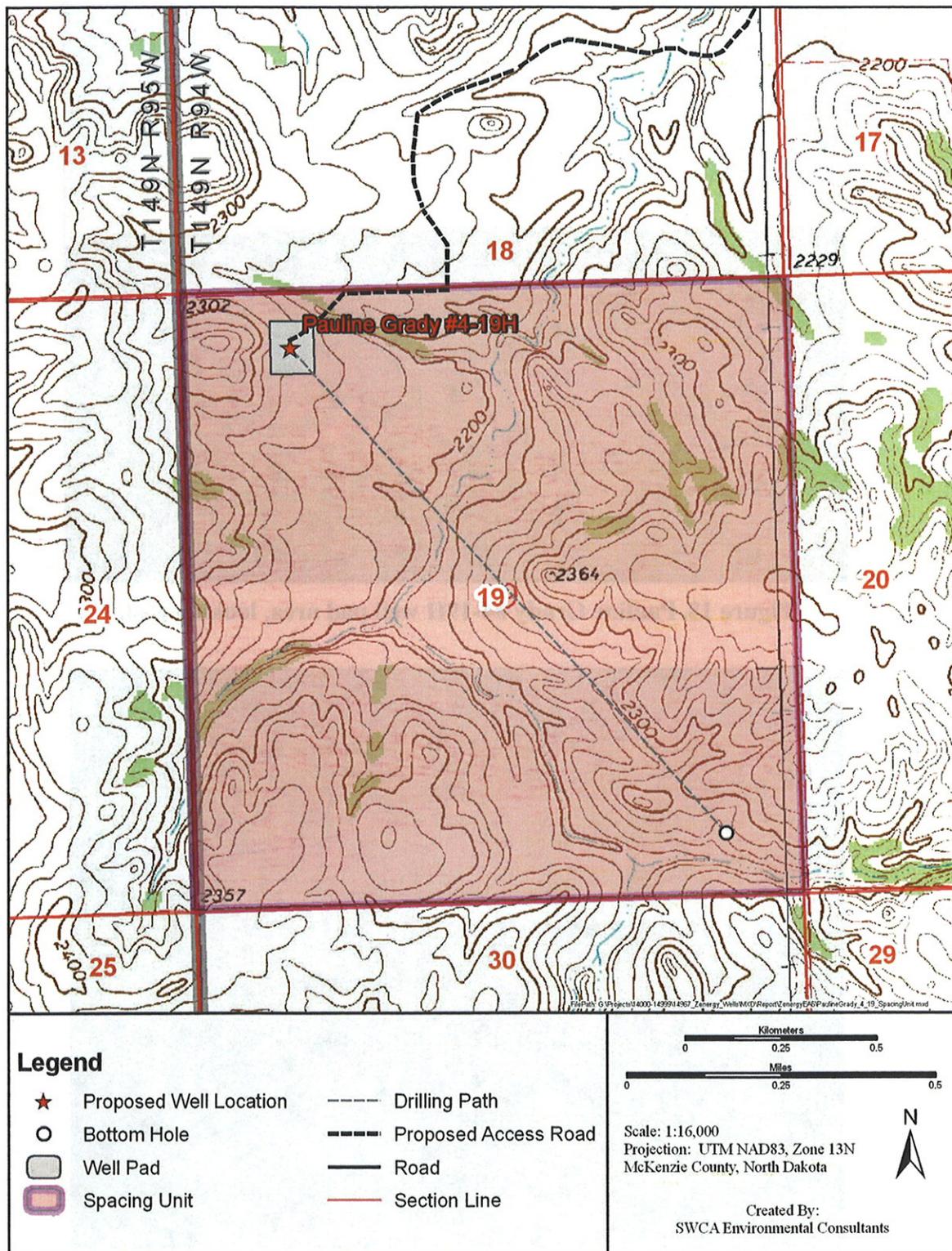


Figure 20. Pauline Grady #4-19H proposed location showing spacing unit and drilling target.



Figure 21. TAT (1800) #2-4H well pad area, looking south.



Figure 22. TAT (1800) #2-4H access road area, looking northwest.

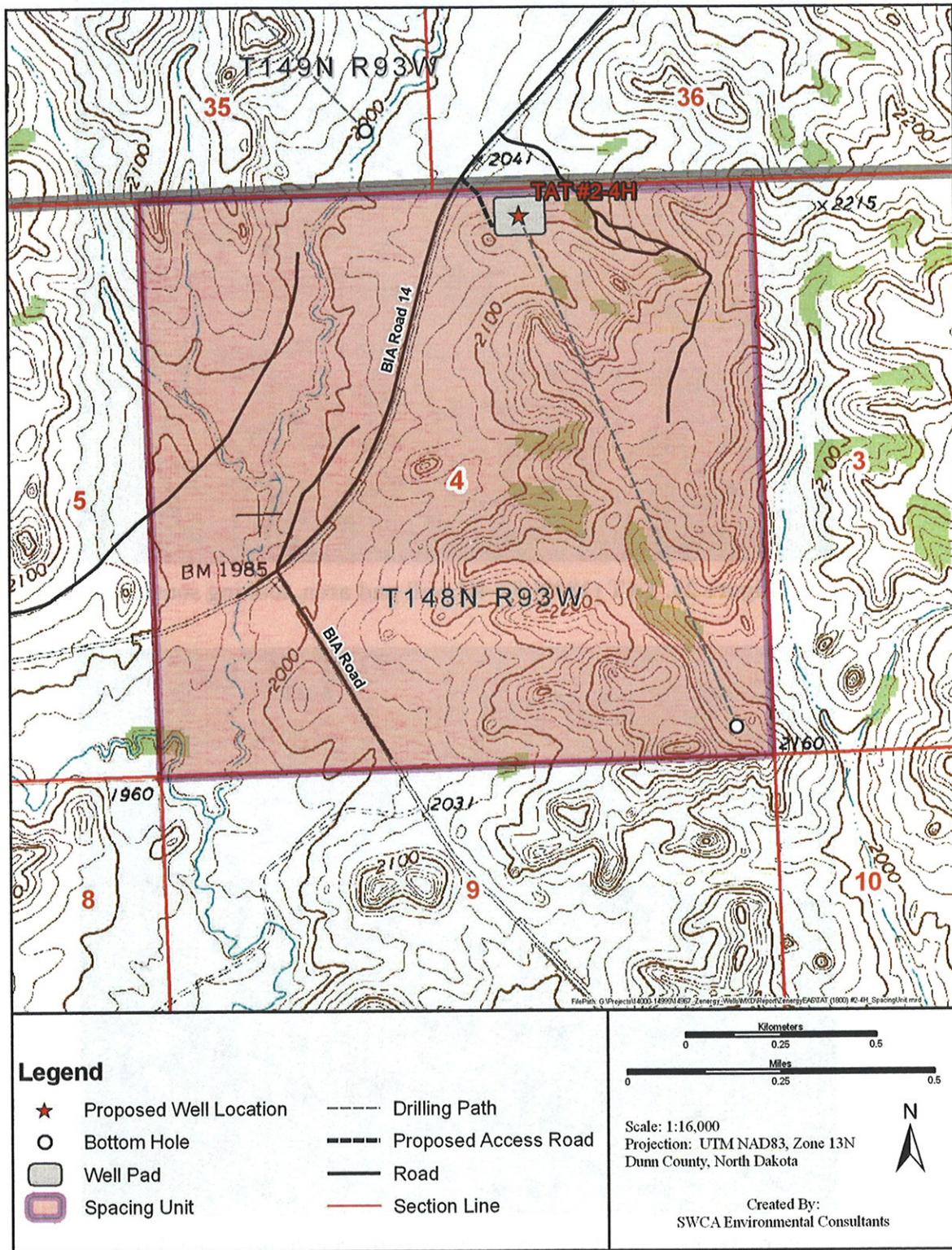


Figure 23. TAT (1800) #2-4H proposed location showing spacing unit and drilling target.

2.2.9 Reclamation

The reserve pit and drill cuttings would be treated, solidified, backfilled, and buried as soon as possible after well completion. Cuttings would be mixed with a non-toxic reagent resulting in an irreversible reaction to produce an inert, solid material. Any oil residue would be dispersed and captured, preventing coalescence and release to the environment at significant rates. The alkaline nature of the stabilized material also chemically stabilizes various metals that may be present, primarily by converting them into less soluble compounds. The treated material would then be buried in the reserve pit, and overlain by at least 4 feet of overburden as required by adopted NDIC regulations.

If commercial production equipment is installed, the well pad would be reduced in size to approximately 300 by 200 feet and the rest of the original pad would be 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. The outslope 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 a width of about 28 feet. Other interim reclamation measures to be accomplished within the first year include reduction of the cut-and-fill slopes, redistribution of stockpiled topsoil, installation of erosion control measures, and reseeded as recommended by the BIA.

Final reclamation would occur either in the very short term if the proposed well is commercially unproductive, or later upon final abandonment of commercial operations. All disturbed areas would be reclaimed, reflecting the BIA view of oil and gas exploration and production as temporary intrusions on the landscape. All facilities would be removed, well bores would be plugged with cement, and dry hole markers would be set. Access roads and work areas would be leveled or backfilled as necessary, scarified, re-contoured, and re-seeded. Exceptions to these reclamation measures might occur if the BIA approves assignment of an access road either to the BIA roads inventory or to concurring surface allottees. Figure 24 shows an example of reclamation (BLM and USFS 2007).

2.3 BIA-PREFERRED ALTERNATIVE

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



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 24. Example of reclamation from the BLM Gold Book (BLM and USFS 2007).

3.0 THE AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

The Fort Berthold Indian Reservation is the home 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 (that 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 range 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 degrees Fahrenheit (°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 mostly grassland, shrubland, and cropland that is currently farmed, idle, or used to graze livestock. The landscape has been previously disturbed by dirt trails and gravel and paved roadways. Ten residences are within 1 mile of the proposed well sites, the closest being 630 feet east of the TAT (1800) #2-4H well site (Table 1).

Table 1. Distance and Direction from Proposed Wells to Nearest Home.

Proposed Well	Feet to Nearest Home	Direction to Nearest Home
Fast Dog #14-5H	4,400	Northwest
Fettig #3-6H	2,100	Southeast
Patricia Charging 2 #2-15H	5,800	West
Pauline Grady #4-9H	9,500	West
TAT (1800) #2-4H	630	East

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 (described in Section 2.1) and the Proposed Action. Impacts may be beneficial or detrimental, direct or indirect, and short-term or long-term. The EA also analyzes the potential for cumulative impacts and ultimately makes a determination as to the significance of any impacts. In the absence of significant negative consequences, it should be noted that a significant benefit from the project does *not* in itself require preparation of an EIS.

3.1 AIR QUALITY

3.1.1 Introduction

The federal Clean Air Act, as amended in 1990, established national ambient air quality standards for criteria pollutants to protect public health and welfare. It also set standards for other compounds that can cause cancer, regulated emissions that cause acid rain, and required federal permits for large sources. National standards have been established for ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, particulate matter (PM), and lead. These standards were set for pervasive compounds that are generally emitted by industry or motor vehicles. Standards for each pollutant meet specific public health and welfare criteria; thus, they are called the 'criteria pollutants.' Some states have adopted more stringent standards for criteria pollutants, or have chosen to adopt new standards for other pollutants. For instance, North Dakota has a standard for hydrogen sulfide that the U.S. Environmental Protection Agency (EPA) does not.

3.1.2 Atmospheric Stability and Dispersion, and Pollutant Concentrations

The quantity of pollutant emissions in an area and the degree to which these pollutants disperse directly affects resulting concentrations (and hence health affects). Pollutant dispersion, in turn, is directly affected by atmospheric stability. Atmospheric stability determines the amount of vertical and horizontal air exchange, or mixing, that can occur within a given air basin. Restricted mixing and low wind speeds characterize a high degree of atmospheric stability. These conditions are characteristic of temperature inversions. The height of the inversion determines the mixing volume trapped below.

Three types of temperature inversions typically occur that affect air quality: subsidence, katabatic, and radiation. A subsidence inversion occurs when a mass of aloft high-pressure (cold) air slowly sinks toward the surface. This causes the air underneath to heat as it is compressed. These subsiding layers are more stable than they were at their original higher altitudes. These inversions break up when a low-pressure front moves into the area and causes turbulence.

Katabatic inversions occur when air cooling at higher elevation (e.g., hills) slides, because it is more dense, down into valleys. This cool air in turn lifts warmer air, creating a strong boundary layer. If pollutants are emitted into the air near the surface after this inversion

forms, there will be little vertical mixing until the inversion breaks. Katabatic inversions typically break when the sun warms the earth's surface and allow warmer air to float up through the boundary layer, thus creating vertical mixing.

Radiation inversions form when the lowest levels of the atmosphere are cooled by contact with the earth's surface, which cools by emitting radiation. Factors that help a radiation inversion form include calm winds, dry air, clear skies, long nights, and moist ground surface. Radiation inversions often occur in winter after rainstorms. They are often marked by strong surface fog. Like katabatic inversions, these inversions typically break up when the sun's energy penetrates to the surface causing vertical mixing to occur.

The winds and unstable air conditions experienced during the passage of storms result in low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold, moist air to pool on the valley floors and in low areas. This creates strong low-level temperature inversions and very stable air conditions. This situation can lead to fog conditions. If acidic compounds are present, such as sulfur dioxide, the fog may become acidic as chemicals adsorb onto water droplets. Fog measurements in some areas of the western United States have found acid levels the same as table vinegar (ph 3.5).

Conditions favorable to fog formation are also conditions favorable to high concentrations of CO and PM2.5. Maximum CO concentrations tend to occur on clear, cold nights when a strong surface inversion is present and large quantities of emissions are occurring. The water droplets in fog, however, can act as a sink for CO and nitrogen oxides (NO_x), temporarily lowering pollutant concentrations. At the same time, however, fog can also help in the formation of secondary particulates such as ammonium sulfate. These secondary particulates are believed to be a significant contributor of high winter season PM2.5 levels.

3.1.3 Greenhouse Gas Emissions and Climate Change

In 1824, the French mathematician Joseph Fourier first postulated the ability of atmospheric gases to act as an insulator for a planet (known as the greenhouse effect). In 1896, Svante Arrhenius, a Nobel laureate, developed the mathematical equations that explain how atmospheric carbon dioxide (CO₂) and water vapor can alter surface temperature. His original equation is still in use today. The Intergovernmental Panel on Climate Change (IPCC) has researched and reported on global warming since the late 1980s. The IPCC has produced four formal reports and was awarded the Nobel Peace Prize in 2007 for this work.

CO₂ is the primary greenhouse gas (GHG), responsible for approximately 90 percent of radiative forcing (the rate of energy change as measured at the top of the atmosphere; can be positive [warmer] or negative [cooler]). To simplify discussion of the various GHGs, the term 'Equivalent CO₂ or CO₂e' has been developed. CO₂e is the amount of CO₂ that would cause the same level of radiative forcing as a unit of one of the other GHGs. For example, one ton of methane (CH₄) has a CO₂e of 22 tons; therefore, 22 tons of CO₂ would cause the same level of radiative forcing as one ton of CH₄. Nitrous oxide (N₂O) has a CO₂e value of 310. Thus, control strategies often focus on the gases with the highest CO₂e value. CH₄ is a common fugitive gas emission in oil and gas fields and is emitted at many phases of exploration and production.

In general, various terrestrial and marine systems have kept the earth's average temperature and precipitation in a narrow range for approximately the last 10,000 years. This stable climate allowed the development of agriculture and rise of the human population. Human emissions of chemical compounds into the atmosphere and land use changes (that may reduce carbon uptake and sequestration) are primary causes of climate change. Human population has increased from about 1.2 billion in 1850 to about 6.6 billion today, while atmospheric CO₂ increased from about 280 parts per million (ppm) in 1750 to 389 ppm today (June 2009) (CO2Now.org 2009). Atmospheric CO₂ levels are now higher than at any time in the last 800,000 years. The primary source of CO₂ increases is the combustion of fossil fuels that release carbon buried in the earth into the atmosphere. Release of CH₄ and other GHG compounds such as N₂O are also increasing.

What does this mean? According to the Pew Center, "Over the past 50 years, the (worldwide) data on extreme temperatures have shown similar trends of rising temperatures: cold days, cold nights, and frosts occurred less frequently over time, while hot days, hot nights, and heat waves occurred more frequently (Pew Center 2009)." Generally, the earth's temperature has increased about one degree Celsius since 1850 but some areas have seen an increase of four degrees. Sea levels are also rising, mountain glaciers are disappearing, and ocean currents, such as the Gulf Stream, are slowing. According to the IPCC, sea levels could rise by 2.5 feet to over 6.6 feet depending on the rate of melt in the Polar Regions. Much of the increase is due to thermal expansion. Changes of this magnitude will affect rainfall patterns worldwide.

The retreat of ice sheets at both poles also changes the earth's albedo (light reflectance) so that more sunlight is absorbed and heat retained. There is a substantial concern that, as the arctic ice melts, the tundra releases trapped CH₄, essentially creating a positive feedback loop for radiative forcing. These factors contribute to a positive feedback loop that increases the rate of polar change. If one of the polar ice sheets on Greenland or West Antarctica becomes unstable because of rapid warming, sea level is likely to continue to rise for more than a thousand years and could rise by 20 feet or more. This would permanently flood virtually all of the world's major coastal cities (IPCC 2007).

According to the Center for Integrative Environmental Research at the University of Maryland (CIERUM), climate change will affect the climate of North Dakota significantly over time. "North Dakota will experience an increase in the unpredictability of droughts, floods and pests. This will make it hard for farmers—and especially small farmers—to remain in the agricultural industry. Damages to the agricultural industry will in turn have negative effects on the livestock industry. Furthermore, the hunting, fishing and tourism industries will suffer losses due to reductions in habitats and receding water levels. These losses can, and are likely to be, devastating to North Dakota's economy, which has a small population and relies heavily on the revenue procured by these industries (CIERUM 2008)."

3.1.4 Criteria Pollutants

Ozone is a colorless gas with a pungent, irritating odor and creates a widespread air quality problem in most of the world's industrialized areas. Ozone smog is not emitted directly into the atmosphere but is primarily formed through the reaction of hydrocarbons and NO_x in the

presence of sunlight. Ozone's health effects can include reduced lung function, aggravated respiratory illness, and irritated eyes, nose, and throat. Chronic exposure can cause permanent damage to the alveoli of the lungs. Ozone can persist for many days after formation and travel several hundred miles.

Respirable Particulate Matter is a class of compounds that can lodge deep in the lungs causing health problems. Based on extensive health studies, particulate matter is regulated under two classes. PM₁₀ is the fraction of total PM 10 microns or smaller, and PM_{2.5} is two and a half microns or smaller. Respirable particulate matter can range from inorganic wind-blown soil to organic and toxic compounds found in diesel exhaust. Toxic compounds such as benzene often find a route into the body via inhalation of fine particulate matter.

Nitrogen dioxide (NO₂) is a reddish-brown gas with an irritating odor. Primary sources include motor vehicles, industrial facilities, and power plants. In the summer months, NO₂ is a major component of photochemical smog. NO₂ is an irritating gas that may constrict airways, especially of asthmatics, and increase the susceptibility to infection in the general population. NO₂ is also involved in ozone smog production.

Carbon monoxide (CO) is a colorless, odorless gas that is a byproduct of incomplete combustion. CO concentrations typically peak nearest a source, such as roadways or areas with high fireplace use, and decrease rapidly as distance from the source increases. Ambient levels are typically found during periods of stagnant weather, such as on still winter evenings with a strong temperature inversion. CO is readily absorbed into the body from the air. It decreases the capacity of the blood to transport oxygen, leading to health risks for unborn children and people suffering from heart and lung disease. The symptoms of excessive exposure are headaches, fatigue, slow reflexes, and dizziness.

Sulfur dioxide (SO₂) is a colorless gas with a strong, suffocating odor. SO₂ is produced by burning coal, fuel oil, and diesel fuel. SO₂ can trigger constriction of the airways, causing particular difficulties for asthmatics. Long-term exposure is associated with increased risk of mortality from respiratory or cardiovascular disease. SO₂ emissions are also a primary cause of acid rain and plant damage.

The federal and state governments have set standards based on set criteria for various air pollutants caused by human activity. Table 2 shows standards for these criteria pollutants.

Table 2. Air Quality Standards and Monitored Data.

Pollutant	Averaging Period	NAAQS ($\mu\text{g}/\text{m}^3$) or (ppm)	Year		
			2006	2007	2008
SO ₂ (in ppm)	24-Hour	0.14	0.011	0.011	0.009
	Annual Mean	0.03	0.002	0.002	0.002
PM ₁₀ (in $\mu\text{g}/\text{m}^3$)	24-Hour	150	50	57	108
	Annual Mean	50	14	13	16
PM _{2.5} (in $\mu\text{g}/\text{m}^3$)	24-Hour	35	18.9	13.5	16.4
	Weighted Annual Mean	15	6.3	6.6	6.7
NO ₂ (in ppm)	Annual Mean	0.053	0.003	0.003	0.003
O ₃ (in ppm)	1-Hour	0.12	0.076	0.076	0.069
	8-Hour	0.08	0.067	0.065	0.063

Source: EPA 2009. $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter. ppm = parts per million

Note: for PM_{2.5} the 4th highest 24-hour value is reported per EPA attainment evaluation protocol.

3.1.5 Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are a class of compounds known to cause cancer, mutation, or other serious health problems. HAPs are usually a localized problem near the emission source. HAPs are regulated separately from criteria air pollutants. There are several hundred HAPs recognized by the EPA and State of North Dakota. Health effects of HAPs may occur at exceptionally low levels; for many HAPs, it is not possible to identify exposure levels that do *not* produce adverse health effects. Major sources of toxic air contaminants include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), wood smoke, and motor vehicle exhaust. Unlike regulations for criteria pollutants, there are no ambient air quality standards for HAPs. Examples of HAPs found in gases released by oil field development and operation include benzene, toluene, xylene, and formaldehyde (BLM 2009). HAP emissions receive evaluation based on the degree of exposure that can cause risk of premature mortality, usually from cancer.

Risk assessments express premature mortality in terms of the number of deaths expected per one million persons. The North Dakota Department of Health (NDDH) typically reviews projects and either requires an applicant to prepare a risk assessment or assign the state engineers to do the work. The state requires that maximum individual cancer risk be calculated using its adopted protocol (the Determination of Compliance in the state's Air Toxics Policy). For new sources emitting HAPs with known negative health effects, an applicant must demonstrate that the combined impact of new HAP emission does not result in a maximum individual cancer risk greater than 1×10^{-5} (one in one hundred thousand).

3.1.6 Air Monitoring

The NDDH operates a network of monitoring stations around the state that continuously measure pollution levels. Industry also operates monitoring stations as required by the state. The data from all these stations are subject to quality assurance, and when approved, the data are published on the World Wide Web (available from EPA and other sources). Monitoring stations near the project site include Watford City in McKenzie County, Dunn Center in Dunn

County, and Beulah in Mercer County. These stations are located west, south, and southeast, respectively, of the proposed well sites. Criteria pollutants measured include SO₂, PM₁₀, NO₂, and ozone. Lead and CO are not monitored by any of the three stations. Table 2 summarizes federal air quality standards and available air quality data from the three-county study area. The highest value at any of the three monitoring locations is shown for each year.

Note that North Dakota has separate state standards for several pollutants that are different from the federal criteria standards. These are:

- SO₂ (ppm) – 0.023 annual arithmetic mean, 0.099 24-hour concentration, and 0.273 one-hour concentration.
- H₂S (ppm) – 10 instantaneous, 0.20 one-hour, 0.10 24-hour, and 0.02 3-month arithmetic mean.

All other state criteria pollutant standards are the same as federal (shown in Table 2). North Dakota was one of 13 states that met standards for all federal criteria pollutants in 2008.

The Clean Air Act mandates prevention of significant deterioration (PSD) in the designated attainment areas. Class I attainment areas have national significance and include national parks greater than 6,000 acres, national monuments, national seashores, and federal wilderness areas larger than 5,000 acres that were designated prior to 1977. Theodore Roosevelt National Park, a Class I area that covers about 110 square miles in three units within the Little Missouri National Grassland, lies between Medora and Watford City and is roughly 30 to 40 miles west of the proposed well sites. All other parts of the state, including the Reservation, are classified Class II, affording them a lower level of protection from significant deterioration.

3.1.7 Response to the Threat of Climate Change

The EPA has proposed an endangerment finding that would allow regulation of GHGs under the Clean Air Act. The first step is a regulation that requires sources emitting 25,000 tons or more CO₂e to report their emissions. The EPA and the National Highway Traffic Safety Administration have increased corporate fuel economy standards to promote national energy security and reduce GHGs. Standards will equal 35 miles per gallon by 2020, with an estimated savings to drivers of \$100 billion annually. Many U.S. states and foreign nations have adopted goals and actions to reduce GHGs to levels scientists forecast will allow the earth's climate to stabilize at one to two degrees Celsius above the current level. Additional regulation is currently being developed by the U.S. Congress to roll back emissions to levels recommended by atmospheric scientists.

3.1.8 Project Emissions

Oilfield emissions encompass three primary areas: combustion, fugitive, and vented.

- Combustion emissions include SO₂, ozone precursors called volatile organic compounds (VOCs), GHGs, and HAPs. Sources include engine exhaust, dehydrators, and flaring.

- Fugitive emissions include criteria pollutants, H₂S, VOCs, HAPs, and GHGs. Sources include equipment leaks, evaporation ponds and pits, condensate tanks, storage tanks, and windblown dust (from truck and construction activity).
- Vented emissions include GHGs, VOCs, and HAPs. Primary sources are emergency pressure relief valves and dehydrator vents.

Pad and road construction, drilling activities, and tanker traffic would generate emissions of criteria pollutants and HAPs. Primary emissions sources during drilling are diesel exhaust, windblown dust from disturbed areas and travel on dirt roads, evaporation from pits and sumps, and gas venting. Diesel emissions are being progressively controlled by EPA in a nationwide program. This program takes a two-pronged approach. First, fuels are improving to the ultra-low sulfur standard, and secondly manufacturers must produce progressively lower engine emissions.

3.1.9 Regulatory Emission Controls

Under the Clean Air Act, federal land management agencies have an affirmative responsibility to help protect air quality. The tribes, federal land managers, and the State of North Dakota can make emission controls part of a lease agreement. The proposed project is similar to other projects installed nearby with state approval. State policy for permitting new oil and gas wells is as follows: Any oil or gas well production facility that emits or has the potential to emit 250 tons per year or more of any air contaminant regulated under North Dakota code must comply with state permitting requirements. The discussion outlines requirements for control of emissions from treaters, separators, flares, tanks, and other on-site equipment.

The North Dakota Air Pollution Control Rules require that the owner/operator submit an oil/gas facility registration form. This form must include an analysis of any gas produced from the well. The following sources must register oil and gas wells with the NDDH:

1. Any oil and gas well that is/was completed or re-completed on or after July 1, 1987. The registration form must be submitted within 90 days of the completion or re-completion of the well.
2. The owner or operator of any oil or gas well shall inform the Health Department of any change to the information contained on the registration form for a particular well. The owner shall submit a new gas analysis if the composition or the volume of the gas produced from the well has changed from the previous analysis, and caused an increase of 10 tons per year or more of sulfur compounds.
3. North Dakota rules require that all new sources of H₂S and VOCs be flared or treated in an equally effective manner. Flares must have an auto igniter or pilot light. The stack height of flares will be sufficient to allow dispersion of the flared gas. The gas produced from the Bakken Formation is typically low in H₂S so odors from fugitive gas leaks are not expected to be a problem.

4. Chapter 33-15.03.03 of the state rules specify that fugitive dust emissions greater than 40% opacity cannot leave the project site for more than one six-minute period per hour. This applies to all construction and unpaved road emission sources.

3.1.10 Best Management Practices

Under the Clean Air Act, federal land management agencies have an affirmative responsibility to protect air quality. Tribes, federal land managers, and private entities can make emission controls part of a lease agreement. BMPs can be adopted for various portions of an oil/gas wells lifecycle. BMPs fall into six general categories:

- Transportation
- Drilling
- Unplanned or Emergency Releases
- Vapor Recovery
- Inspection and Maintenance
- Monitoring and repair

The BLM has developed a set of BMPs for oil and gas extraction. As documented in case studies, applying many of the recommended BMPs produced substantial savings and increased revenue from fixed assets. The leasing agent (e.g., BLM) will negotiate a set of BMPs with the applicant before final sale. These BMPs will be formally presented, in writing, to the state Department of Health as part of the oil/gas facility registration process. They will also run with the land so that any transfer requires the new operator to meet or exceed the same standards for emission control.

3.2 WATER RESOURCES

3.2.1 Surface Water

As shown in Figure 25, no perennial waterbodies are located near the proposed project areas. Given the topography of the individual sites, runoff occurs largely as sheet-flow. Runoff that concentrates near the proposed project well areas will flow to Upper or Lower Squaw Creek, Upper Moccasin Creek, Skunk Creek, Upper Bear Den Creek, and subsequently on to Lake Sakakawea.

The proposed Dakota-3 Fettig #3-6H is located in the Upper Squaw Creek sub-watershed (hydrologic unit code [HUC] 1011020050607) of the Waterchief Bay Watershed (Figure 25). 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 north into an ephemeral unnamed tributary of Squaw Creek (HUC 10110205006103) and travel approximately 31.2 miles to reach perennial waters in Lake Sakakawea (Figure 26).

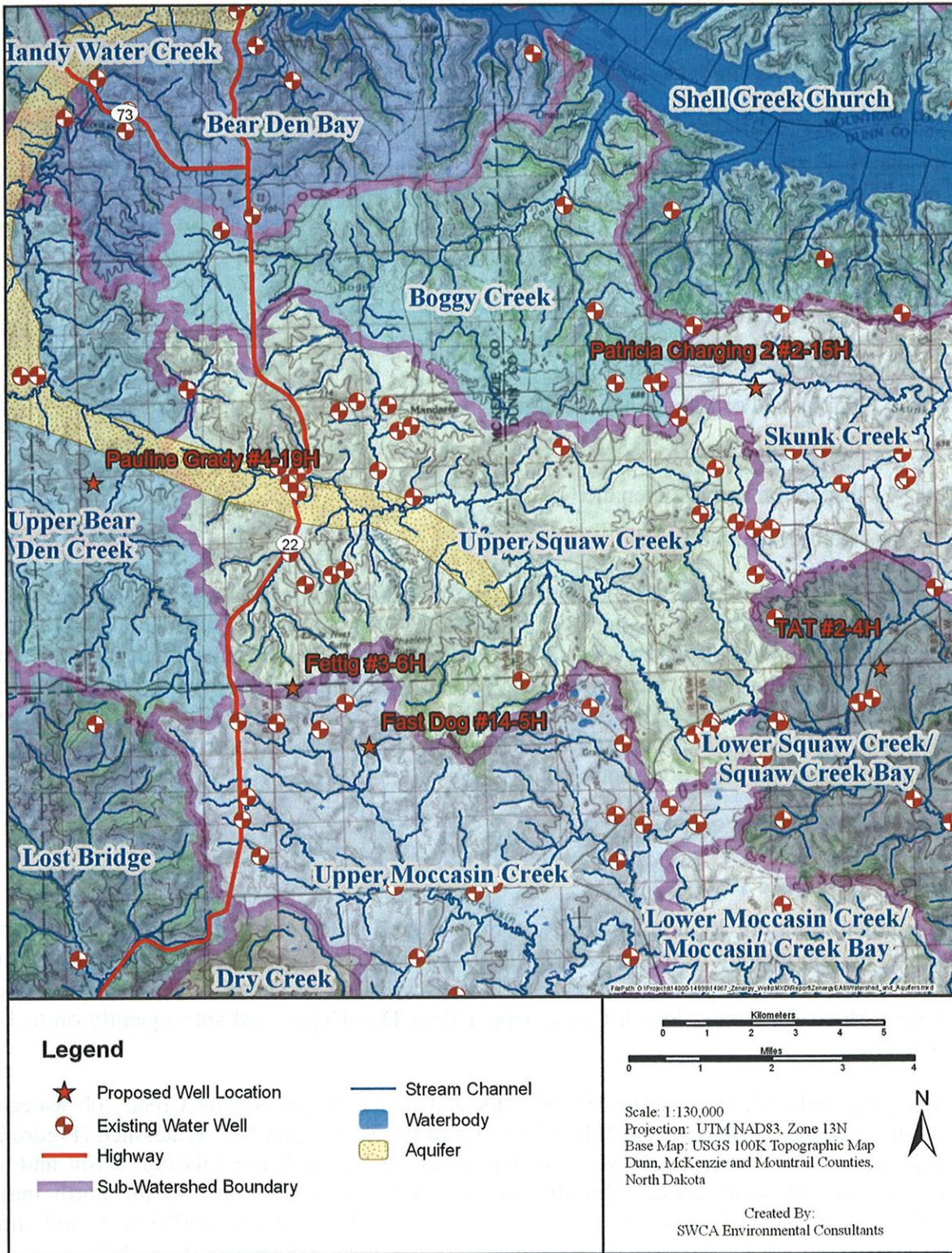


Figure 25. Watersheds, surface runoff direction, and aquifers near the project area.

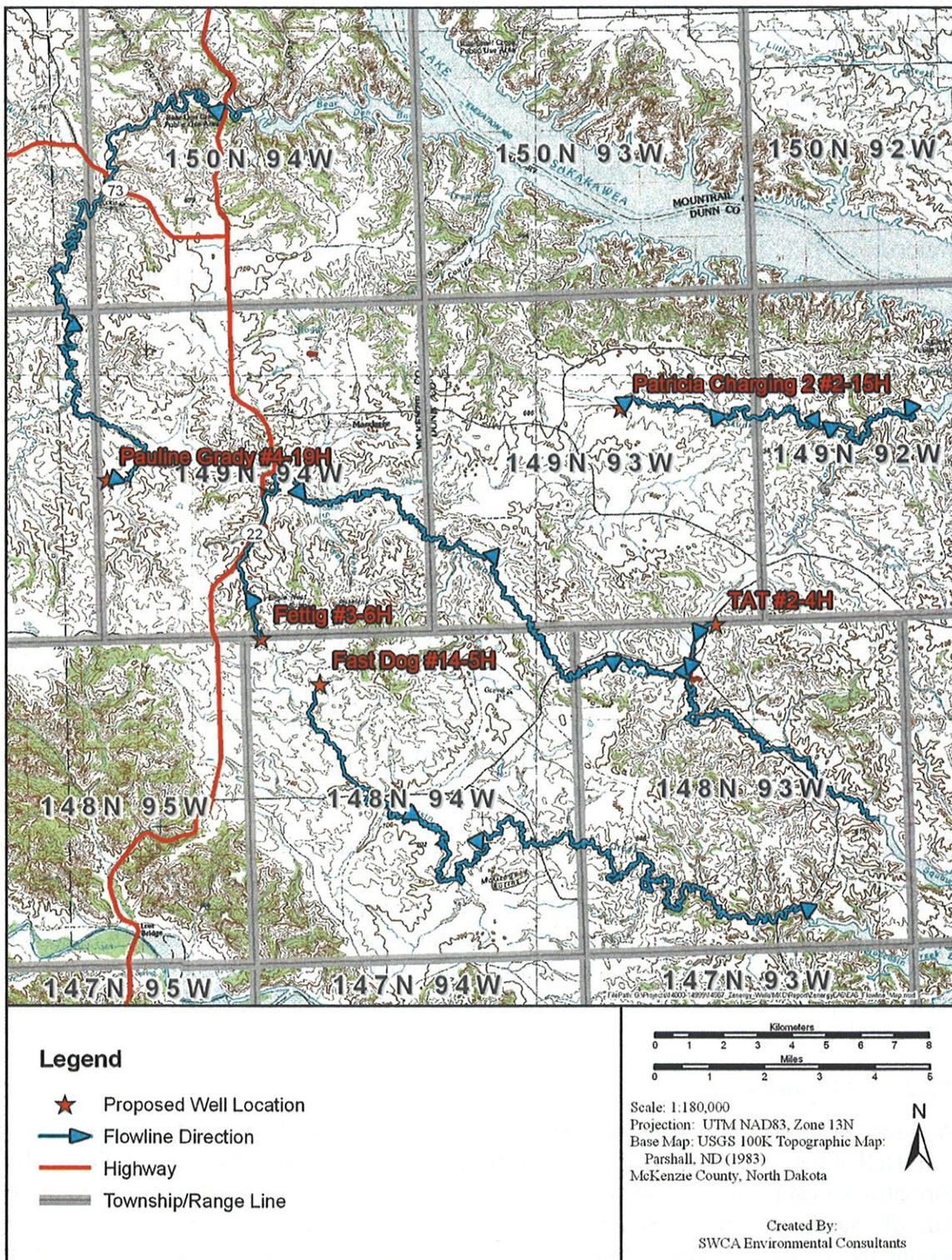


Figure 26. Drainage direction from each of the proposed well pads.

The proposed Dakota-3 Fast Dog #14-5H is located in the Upper Moccasin Creek sub-watershed (HUC 101102050604) of the Waterchief Bay Watershed (Figure 25). It is part of the Lower Little Missouri sub-basin, Little Missouri basin, Little Missouri sub-region, and Missouri region. Runoff from the well pad would flow to the southwest into an ephemeral unnamed tributary of Upper Moccasin Creek (HUC 10110205002439) and travel approximately 26.4 miles to reach perennial waters in Lake Sakakawea (Figure 26).

The proposed Dakota-3 Patricia Charging 2 #2-15H is located in the Skunk Creek sub-watershed (HUC 101101012102) of the Independence Point Bay Watershed (Figure 25). It is part of the Lake Sakakawea sub-basin, the Lake Sakakawea basin, the Little Missouri River and sub-region, and Missouri region. Runoff from the well pad would flow to the southeast into Skunk Creek (HUC 10110101000560) and travel approximately 10.3 miles to reach perennial waters in Lake Sakakawea (Figure 26).

The proposed TAT (1800) #2-4H well is located in the Lower Squaw Creek/Squaw Creek Bay sub-watershed (HUC 101102050608) of the Waterchief Bay Watershed (Figure 25). It is part of the Lower Little Missouri sub-basin, Little Missouri basin, Little Missouri sub-region, and Missouri region. Runoff from the well pad will flow to the west into an ephemeral unnamed tributary of Lower Squaw Creek (HUC 10110205001696) and travel approximately 10.0 miles to reach perennial waters in Lake Sakakawea (Figure 26).

The proposed Dakota-3 Pauline Grady #4-19H is located in the Upper Bear Den Creek sub-watershed (HUC 101101012001) of the Bear Den Creek Watershed (Figure 25). It is part of the Lake Sakakawea sub-basin, the Lake Sakakawea basin, the Little Missouri River and sub-region, and Missouri region. Runoff from the well pad would flow to the northeast into an ephemeral unnamed tributary (HUC 10110101001215) of Upper Bear Den Creek and travel approximately 19.8 miles to reach perennial waters in Lake Sakakawea (Figure 26).

The proposed projects would be engineered and constructed to minimize the suspended sediment (i.e., turbidity) concentration of surface runoff, avoid disruption of drainages, and avoid direct impacts to surface water. No surface water would be used for well drilling operations. Any chemicals or potentially hazardous materials would be handled in accordance with the operator'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.

3.2.2 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). Several shallow aquifers related to post-glacial outwash composed of till, silt, sand, and gravel are located in Dunn and McKenzie counties. However, none are within the proposed project areas, although the Dakota-3 Pauline Grady #4-19H well lies approximately 0.45 mile south of the mapped boundary of the alluvial aquifer (Figure 25). The shallow Sentinel Butte Formation, commonly used for domestic supply in the area, outcrops in Dunn County and meets standards of the NDDH (Croft 1985). Detailed analyses are available from the North Dakota Geological Survey, Bulletin 68, Part III, 1976.

Table 3. Common Aquifers in the Proposed Project Area and Surrounding Region.

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.

Source: Croft (1985) and Klausning (1979).
gal/min = gallons per minute

Review of electronic records of the North Dakota State Water Commission revealed 120 existing water wells within an approximate 5-mile radius of the proposed project areas (Table 4). Three water wells are found within 1 mile of Dakota-3 Fettig #3-6H, one water well within 1 mile of Dakota-3 Fast Dog #14-5H, zero water wells within 1 mile of Dakota-3 Pauline Grady #4-19H, one water well with 1 mile of Dakota-3 Patricia Charging 2 #2-15H, and three water wells within 1 mile of Dakota-3 TAT (1800) #2-4H. Water quality would be protected by drilling with freshwater to a point below the base of the Fox Hills Formation, implementing proper hazardous materials management, and using appropriate casing and cementing. Drilling would proceed in compliance with Onshore Oil and Gas Order No. 2, Drilling Operations (43 CFR 3160).

Table 4. Existing Water Wells near the Project Areas.

Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well	Miles to Proposed Well
148-092-05	Tribal	1950	5	148/92	Unused	400	Unknown	2-4H	4.8
148-092-05DBC	Keith Mandan	1996	5	148/92	Domestic	62	Unknown	2-4H	4.9
148-092-06AAD	Rita Blackhawk	1981	6	148/92	Domestic	210	Unknown	2-4H	4.3
148-092-06ABB	USGS	1994	6	148/92	Monitoring	200	Unknown	2-4H	3.9
148-092-06ACC	Geraldine VanDike	1996	6	148/92	Stock	450	Unknown	2-4H	3.9
148-092-06BAD	G. VanDike	1967	6	148/92	Domestic/Stock	133	Sentinel Butte	2-4H	3.8
148-092-06BCA	P. VanDike	1971	6	148/92	Stock	89	Sentinal Butte	2-4H	3.7
148-092-06BDB	P. VanDike	1966	6	148/92	Stock	98	Sentinal Butte/ Tongue River	2-4H	3.6
148-093-01ADD	Geraldine VanDyke	2000	1	148/93	Domestic	548	Unknown	2-4H	3.3
148-093-04	Pat Fredericks	1985	4	148/93	Domestic	71	Unknown	2-4H	0.4
148-093-04CAB1	NDSWC	1973	4	148/93	Unused	340	Tongue River	2-4H	0.6
148-093-04CAB2	NDSWC	1973	4	148/93	Unused	190	Sentinal Butte	2-4H	0.6
148-093-05CCA1	O. Standish	Unknown	5	148/93	Unused	102	Sentinal Butte	2-4H	1.6
148-093-05CCA2	O. Standish	1968	5	148/93	Domestic	72	Buried Glaciaofluvial	2-4H	1.6
148-093-06CCA	Rudolph Sanders	1981	6	148/93	Stock	120	Unknown	2-4H	2.5
148-093-07ADA	R. Goodbird	Unknown	7	148/93	Unused	Unknown	Unknown	2-4H	2.0
148-093-09BBC	Tribal	1950	9	148/93	Unused	40	Buried Glaciaofluvial	2-4H	1.2
148-093-10CCC	NDSWC	1974	10	148/93	Unused	103	Sentinal Butte	2-4H	1.9
148-093-14CDC	NDSWC	1974	14	148/93	Unused	57	Sentinal Butte	2-4H	3.3
148-093-15ACB	NDSWC	1971	15	148/93	Unknown	40	Unknown	2-4H	2.4
148-093-17BBD	J. McKinze	Unknown	17	148/93	Unused	160	Sentinal Butte	2-4H	2.5
148-093-20BCA	Tribal	1950	20	148/93	Unused	450	Unknown	2-4H	3.6
148-094-01DDD	NDSWC	1971	1	148/94	Unused	80	Unknown	2-4H	2.7

Environmental Assessment: Zenergy Operating Company, LLC, Dakota-3 Fast Dog #14-5H, Dakota-3 Fettig #3-6H, Dakota-3 Patricia Charging 2 #2-15H, Dakota-3 Pauline Grady #4-19H, Dakota-3 TAT (1800) #2-4H

Well Number	Owner	Date Drilled	Section	Township/ Range	Type/Use	Depth (feet)	Aquifer	Nearest Well	Miles to Proposed Well
148-094-02	Garland Beston	1982	2	148/94	Domestic	196	Unknown	14-5H	3.2
148-094-03ABB	Tribal	1950	3	148/94	Unused	450	Unknown	14-5H	2.3
148-094-05BCB	USGS	1994	5	148/94	Monitoring	104	Unknown	14-5H	0.7
148-094-06CBB	Gabe Fettig	2002	6	148/94	Stock	1,848	Unknown	3-6H	0.5
148-094-06DBD	Tribal	Unknown	6	148/94	Stock	Unknown	Sentinal Butte Tongue River	3-6H	0.7
148-094-11AAA2	USGS	1994	11	148/94	Monitoring	58	Unknown	14-5H	3.5
148-094-12DCC	USGS	1992	12	148/94	Monitoring	51	Unknown	2-4H	3.5
148-094-13AAD	Tribal	1950	13	148/94	Unused	450	Unknown	2-4H	3.4
148-094-13BBD	R. Hall	1967	13	148/94	Domestic\ Stock	30	Sentinal Butte Tongue River	2-4H	4.0
148-094-14AAB	USGS	1992	14	148/94	Monitoring	315	Tongue River	14-5H	3.6
148-094-14DAC	R. Hall	1968	14	148/94	Stock	100	Buried Glaciofluvial	14-5H	3.9
148-094-15CCC2	USGS	1994	15	148/94	Monitoring	36	Unknown	14-5H	2.6
148-094-17DCD2	USGS	1994	17	148/94	Monitoring	70	Unknown	14-5H	2.0
148-094-20DDD	Tribal	Unknown	20	148/94	Unused	135	Till	14-5H	3.0
148-094-21AAB1	USGS	1994	21	148/94	Monitoring	190	Unknown	14-5H	2.5
148-094-21AAB2	USGS	1994	21	148/94	Monitoring	125	Unknown	14-5H	2.5
148-094-21AAB2	USGS	1994	21	148/94	Monitoring	150	Unknown	14-5H	2.5
148-094-26AAA	Matt Young Bird	1973	26	148/94	Domestic	124	Unknown	14-5H	4.7
148-094-28	Matt Young Bird	1982	28	148/94	Domestic	225	Unknown	14-5H	3.7
148-095-01DBB	Tribal	Unknown	1	148/95	Unknown	240	Sentinel Butte	3-6H	0.9
148-095-03	Daryl Young Bird	1985	3	148/95	Domestic	247	Unknown	3-6H	2.8
148-095-12DB	Joe Woundedface	1993	12	148/95	Domestic	58	Unknown	3-6H	1.6
148-095-12DB	Joe Woundedface	1993	12	148/95	Domestic	15	Unknown	3-6H	1.6

Environmental Assessment: Zenergy Operating Company, LLC, Dakota-3 Fast Dog #14-5H, Dakota-3 Fettig #3-6H, Dakota-3 Patricia Charging 2 #2-15H, Dakota-3 Pauline Grady #4-19H, Dakota-3 TAT (1800) #2-4H

Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well	Miles to Proposed Well
148-095-12DCC2		1992	12	148/95	Monitoring	52	Sentinal Butte/ Tongue River	3-6H	2.0
148-095-13ADC	Tribal	1950	13	148/95	Unknown	400	Unknown	14-5H	2.2
148-095-22CCA	NDSWC	Unknown	22	148/95	Monitoring	1,455	Fox Hills	3-6H	4.8
149-092-05CCC	Three Affiliated Tribes	570	5	149/92	Stock	570		2-15H	3.7
149-092-22CDC	R. Smith	Unknown	22	149/92	Unknown	40	Sentinal Butte	2-4H	4.7
149-092-27BBA2	USGS	1994	27	149/92	Monitoring	65	Unknown	2-4H	4.5
149-092-29DCC	Tribal	Unknown	29	149/92	Unused	404	Unknown	2-4H	2.7
149-092-30DCB	Ted Linefight III	2003	30	149/92	Domestic	307	Unknown	2-4H	1.9
149-093-02ACB	C. Perkins	1962	2	149/93	Unknown	647	Sentinal Butte Tongue River	2-15H	2.1
149-093-05CDC	NDSWC	1961	5	149/93	Unknown	84	Sentinal Butte Tongue River	2-15H	2.5
149-093-08DCC	M. Fox	1960	8	149/93	Unknown	500	Sentinal Butte Tongue River	2-15H	2.0
149-093-09ABD	Dale McGrady	1981	9	149/93	Stock	150	Unknown	2-15H	1.2
149-093-09CCC	St. Anthony's Mission	1988	9	149/93	Domestic	440	Unknown	2-15H	1.5
149-093-09CCD	St. Anthony's Mission	1952	9	149/93	Unknown	65	Sentinal Butte Tongue River	2-15H	1.3
149-093-10AAA	Tribal	1950	10	149/93	Unused	450	Unknown	2-15H	1.1
149-093-12AB	Ivan Johnson	1976	12	149/93	Stock	Unknown	Unknown	2-15H	2.3
149-093-14CCC	Tribal	Unknown	14	149/93	Unused	432	Sentinal Butte	2-15H	1.0
149-093-14CDD2	USGS	1994	14	149/93	Monitoring	35	Unknown	2-15H	1.3
149-093-16BDD	Paul Rosario	1994	16	149/93	Domestic	450	Unknown	2-15H	1.1
149-093-18DDB	Tribal	Unknown	18	149/93	Unused	465	Sentinal Butte	2-15H	2.8
149-093-21AAD	Gerald Fox	2000	21	149/93	Domestic	99	Unknown	2-15H	1.3
149-093-21DCA	E. Wicker	Unknown	21	149/93	Unknown	35	Sentinal Butte Tongue River	2-15H	1.9

Environmental Assessment: Zenergy Operating Company, LLC, Dakota-3 Fast Dog #14-5H, Dakota-3 Fettig #3-6H, Dakota-3 Patricia Charging 2 #2-15H, Dakota-3 Pauline Grady #4-19H, Dakota-3 TAT (1800) #2-4H

Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well	Miles to Proposed Well
149-093-22CCD	Arla Muzzy	2002	22	149/93	Domestic	92	Unknown	2-15H	1.9
149-093-23ACD	Unknown	Unknown	23	149/93	Unused	34	Sentinal Butte	2-15H	1.8
149-093-24ABB	USGS	1994	24	149/93	Monitoring	35	Unknown	2-15H	2.2
149-093-24ACC2	USGS	1994	24	149/93	Monitoring	33	Unknown	2-15H	2.5
149-093-25DDD	Tribal	Unknown	25	149/93	Unused	147	Sentinal Butte	2-4H	1.3
149-093-27ABA	Patricia McKenzie	2004	27	149/93	Domestic	89	Unknown	2-4H	2.5
149-093-27ABA	M. Younbird	Unknown	27	149/93	Domestic	65	Sentinal Butte	2-4H	2.5
149-093-27BAA	USGS	1994	27	149/93	Monitoring	60	Unknown	2-4H	2.6
149-093-27CAD	USGS	1994	27	149/93	Monitoring	165	Unknown	2-4H	2.2
149-093-34ACA	Tribal	Unknown	34	149/93	Unused	357	Sentinal Butte	2-4H	1.7
149-094-08DCB	Randy Binger	1992	8	149/94	Domestic	195	Unknown	4-19H	1.8
149-094-14	Mandaree School	1994	14	149/94	Monitoring	16	Unknown	3-6H	3.9
149-094-14	Mandaree School	1988	14	149/94	Monitoring	16	Unknown	3-6H	3.9
149-094-14	BIA	2002	14	149/94	Monitoring	29	Unknown	3-6H	3.9
149-094-14	BIA	2002	14	149/94	Monitoring	28	Unknown	3-6H	3.9
149-094-14	BIA	2002	14	149/94	Monitoring	30	Unknown	3-6H	3.9
149-094-14	BIA	2000	14	149/94	Monitoring	25	Unknown	3-6H	3.9
149-094-14ACD	Mike Mason	1973	14	149/94	Domestic	66	Unknown	3-6H	4.0
149-094-14BA	Mandaree 3	1970	14	149/94	Public Supply	1,745	Hell Creek Fox Hills	3-6H	4.2
149-094-15AAA	Sandy Youngbird	2006	15	149/94	Domestic	278	Unknown	3-6H	4.1
149-094-15ABD	Tilly Lone Fight	2005	15	149/94	Domestic	335	Unknown	3-6H	3.9
149-094-16DDC	Jimmy Stone	1981	16	149/94	Domestic	200	Unknown	4-19H	2.6
149-094-21AAD	NDSWC	1980	21	149/94	Unused	147	Unknown	4-19H	2.8
149-094-22BBB	NDSWC	1980	22	149/94	Unused	140	Unknown	4-19H	2.9
149-094-22BCB	NDSWC	1980	22	149/94	Unused	80	Unknown	3-6H	2.8

Environmental Assessment: Zenergy Operating Company, LLC, Dakota-3 Fast Dog #14-5H, Dakota-3 Fettig #3-6H, Dakota-3 Patricia Charging 2 #2-15H, Dakota-3 Pauline Grady #4-19H, Dakota-3 TAT (1800) #2-4H

Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well	Miles to Proposed Well
149-094-23ACD	USGS	1994	23	149/94	Monitoring	109	Unknown	3-6H	3.2
149-094-23BBA	USGS	1994	23	149/94	Monitoring	58	Unknown	3-6H	3.2
149-094-27	Margaret Wolf	1982	27	149/94	Domestic	63	Unknown	3-6H	1.7
149-094-27ACD	George Wolf	1973	27	149/94	Domestic	36	Unknown	3-6H	1.8
149-094-27CB	NDSWC	1973	27	149/94	Domestic	36	Unknown	3-6H	1.4
149-094-28AAA	USGS	1992	28	149/94	Monitoring	120	Sentinal Butte Tongue River	3-6H	2.0
149-095-04DBB	Gerald Johnson	1988	4	149/95	Stock	182	Unknown	4-19H	4.4
149-095-04CCB	NDSWC	1980	4	149/95	Unused	140	Unknown	4-19H	4.7
149-095-05DCD	Faith Lutheran Church	1992	5	149/95	Domestic	183	Unknown	4-19H	5.0
149-095-08AA	Mrs. Ole Heim	1980	8	149/95	Domestic	175	Unknown	4-19H	4.7
149-095-08ADA	NDSWC	1980	8	149/95	Unused	200	Unknown	4-19H	4.6
149-095-09CDD	Unknown	1984	9	149/95	Monitoring	1,564	fox Hills	4-19H	3.9
149-095-09ABC	Lydia Bearstail	2004	9	149/95	Domestic	57	Unknown	4-19H	4.1
149-095-12CAA	BIA	1999	12	149/95	Monitoring	20	Unknown	4-19H	1.7
149-095-12CBA	BIA	1999	12	149/95	Monitoring	25	Unknown	4-19H	1.8
149-095-15CBB	NDSWC	1980	15	149/95	Unused	120	Unknown	4-19H	3.2
149-095-16AA	Amerada	1953	16	149/95	Unknown	9,618	Unknown	4-19H	3.4
149-095-16DAD	NDSWC	1980	16	149/95	Unused	140	Unknown	4-19H	3.2
149-095-23CB	John Kirkland	1988	23	149/95	Stock	166	Unknown	4-19H	2.1
149-095-23CBB	John Kirkland	1988	23	149/95	Stock	140	Unknown	4-19H	2.1
150-092-30ABC	L.L. Stout	1925	30	150/92	Domestic	26	Unknown	2-15H	4.9
150-093-31ADD	Tribal	1961	31	150/93	Unknown	336	Sentinal Butte Tongue River	2-15H	3.7
150-093-33CAA	W. Face	1960	33	150/93	Unknown	388	Sentinal Butte Tongue River	2-15H	2.7

Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well	Miles to Proposed Well
150-094-30AAC	Lawrence Birdsbill	1986	30	150/94	Stock	200	Unknown	4-19H	5.0
150-094-33ACC	USGS	1992	33	150/94	Monitoring	195	Unknown	4-19H	4.4
150-094-33CB	Occidental	1964	33	150/94	Unknown	11,630	Unknown	4-19H	4.0

Source: North Dakota State Water Commission 2009.

BIA = Bureau of Indian Affairs

NDSWC = North Dakota State Water Commission

USGS = U.S. Geological Survey

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, well completion methods would prevent cross contamination between aquifers or the introduction of hazardous materials into aquifers. The majority of the identified groundwater wells may have minimal hydrologic connections due to their respective distances from the project wells.

3.3 WETLANDS, HABITAT, AND WILDLIFE

3.3.1 Wetlands

National Wetland Inventory maps maintained by the U.S. Fish and Wildlife Service (USFWS) do not identify any jurisdictional wetlands within the proposed well pad or access road sites (USFWS 2008a). No wetlands were observed along any access road ROWs or at any of the well sites during surveys conducted in November 2008 and August 2009. No riparian or wetland habitats are anticipated to be directly or indirectly impacted by the proposed access roads or wells.

According to the USFWS National Wetland Inventory database, several palustrine emergent (PEM) wetlands are located between 0.06 and 0.55 mile from the proposed project areas. One PEM wetland is located at a distance of 0.53 mile and a bearing of 21.85° from the Fast Dog #14-5H well pad area. Three PEM wetlands are located at distances of 0.25, 0.43, and 0.47 mile and bearings of 347.12°, 256.39°, and 104.11°, respectively, from the Fettig #3-6H well pad area. Fourteen PEM wetlands are located at distances between 0.06 and 0.48 mile, and bearings between 133.6 and 275.7°, from the Patricia Charging 2 #2-15H well pad area. One PEM wetland is located at a distance of 1.35 miles and a bearing of 112.17° from the Pauline Grady #4-19H well pad area. Five PEM wetlands are located at distances of 0.28, 0.33, 0.38, 0.39, and 0.42 mile and bearings of 303.00°, 334.75°, 343.57°, 351.02°, and 0.62°, respectively, from the TAT (1800) #2-4H well pad area. These PEM wetlands would not be impacted as a result of construction, drilling, or production activities associated with the proposed well pad areas and associated access roads.

3.3.2 Wildlife

Several wildlife species that may exist in Dunn and McKenzie counties are listed as threatened or endangered under the Endangered Species Act (ESA). Listed species in Dunn and McKenzie counties include the black-footed ferret, gray wolf, interior least tern, pallid sturgeon, piping plover, and whooping crane (USFWS 2008b). Although delisted in 2007, the bald eagle remains a species of special concern to the BIA and the Department of the Interior, and is effectively treated the same as listed species. 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. Listed species are described below.

Bald Eagle (*Haliaeetus leucocephalus*)

Status: Delisted in 2007

Likelihood of impact: May affect, but is not likely to adversely affect

Project areas are located between 3.3 and 9.7 miles from Lake Sakakawea and do not contain suitable nesting/perching habitat, concentrated feeding areas, or other necessary habitat. Though delisted, the bald eagle is afforded some protection under the Migratory Bird Treaty Act (916 USC 703-711) and the Bald and Golden Eagle Protection Act (16 USC 668-668c). No impacts are anticipated.

Black-footed Ferret (*Mustela nigripes*)

Status: Endangered

Likelihood of impact: No effect

Several isolated populations are known to exist within the United States. However, this species is presumed extirpated from North Dakota because it has not been observed in the wild for over 20 years. No impacts are anticipated.

Dakota Skipper (*Hesperia dacotae*)

Status: Candidate

Likelihood of impact: May affect, but is not likely to adversely affect

Project areas are maintained for agricultural use including cultivation and pasture land. Therefore, undisturbed, native prairie areas with a high diversity of wildflowers and grasses were not observed within the proposed project areas. The absence of suitable habitat makes the presence of Dakota skippers unlikely. No impacts are anticipated.

Golden Eagle (*Aquila chrysaetos*)

Status: Unlisted; protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

Likelihood of impact: May affect, but is not likely to adversely affect

The golden eagle prefers habitat characterized by open prairie, plains, and forested areas. Usually, golden eagles can be found in proximity to badland cliffs which provide nesting habitat. None of the proposed project areas contain suitable nesting habitat for golden eagles; however, eagle prey species may be present within and around any given project area. No impacts are expected as a result of any activities associated with the construction, production, or reclamation in the project areas.

Gray Wolf (*Canis lupus*)

Status: Endangered

Likelihood of impact: No effect

The project areas do not contain suitable habitat for occupation or colonization by gray wolves. Due to the distance of known gray wolf populations in Minnesota, Canada, Montana, and Wyoming, transient wolves are not expected to be present. No impacts are anticipated.

Interior Least Tern (*Sterna anillarum*)

Status: Endangered

Likelihood of impact: May affect, but is not likely to adversely affect

The proposed project areas would be located in upland areas which would not provide suitable nesting habitat for the interior least tern. Key habitat includes sparsely vegetated sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. Interior least tern nests are usually found along the shoreline and islands of Lake Sakakawea. Migrating or foraging interior least terns may pass through the project areas; however, no adverse impact is expected as a result of construction, production, or reclamation activities.

Pallid Sturgeon (*Scaphirhynchus albus*)

Status: Threatened

Likelihood of impact: May affect, but is not likely to adversely affect

Activities associated with the construction, production, or reclamation of the project areas are not anticipated to adversely affect water quality and therefore not the pallid sturgeon. Pallid sturgeons prefer turbid, main stem river channels. No project area is closer than 3.3 miles from Lake Sakakawea, which will reduce the likelihood of adverse affect due to activities. No impact is anticipated.

Piping Plover (*Charadrius melodus*)

Status: Threatened

Likelihood of impact: May affect, but is not likely to adversely affect

The entire shoreline of Lake Sakakawea has been designated critical habitat for piping plovers. These birds nest on sparsely vegetated shoreline beaches, peninsulas, and islands composed of sand, gravel, or shale. The nearest critical habitat would be at a distance greater than or equal to 3.3 miles from any of the proposed project areas. Individual piping plovers may pass through or forage at the proposed project areas during construction, drilling, production, or reclamation activities. However, no impact is anticipated, though minor impacts could occur as a result of the aforementioned activities.

Whooping Crane (*Grus americana*)

Status: Endangered

Likelihood of impact: May affect, but is not likely to adversely affect

No viable habitat, including PEM wetlands, is located within the proposed project areas. The lack of suitable foraging and nesting habitat makes the proposed project areas unsuitable for whooping cranes. No impact is anticipated.

The wildlife species listed in Table 5 were observed by an ecologist during field visits to the proposed project areas (i.e., primary observation). Various secondary indicators, including scats, tracks, or animal carcasses were not observed within the proposed project areas.

Table 5. Wildlife Observed during Field Surveys at the Proposed Project Areas.

Well Pad Area	Common Name	Scientific Name	Observation Type	Habitat
Fast Dog #14-5H	Coyote	<i>Canis latrans</i>	Primary	Short Grass Prairie
Fettig #3-6H	N/A	N/A	No Species Observed	Short Grass Prairie
Patricia Charging 2 #2-15H	Pronghorn	<i>Antilocapra americana</i>	Primary	Pasture
	Clay-colored sparrow	<i>Spizella pallida</i>	Primary	
	Turkey vulture	<i>Cathartes aura</i>	Primary	
Pauline Grady #4-19H	N/A	N/A	No Species Observed	Short Grass Prairie with Forested Areas in Surrounding Draws
TAT (1800) #2-4H	N/A	N/A	No Species Observed	N/A

The primary impacts to wildlife species will come as a result of the construction of five well pad areas including the reconstruction of existing two-track roads, construction of new access roads, increased vehicular traffic density, drilling activities, and potential commercial production. No impacts to listed species are anticipated because of the low likelihood of their occurrence within the proposed project areas, confirmed by on-site assessments conducted by SWCA biologists. Ground clearing might impact habitat for unlisted species, including small birds, small mammals, and other wildlife species. The proposed projects may affect raptor and migratory bird species through direct mortality, habitat degradation, and/or displacement of individual birds. These impacts are regulated in part through the Migratory Bird Treaty Act of 1918 (916 USC 703-711). Fragmentation of native prairie habitat can detrimentally affect grouse species; however, due to the ratio of each project area to the total landscape area, the overall disturbance would be negligible.

Several precautions that may limit or reduce the possible impact to all wildlife species include:

- locating well pads over areas with existing disturbances;
- netting the reserve pit between drilling and reclamation;
- removing any oil found in pits and ponds;
- installing covers under drip buckets and spigots; and

- conducting interim reclamation of at least half the disturbed area.

Reclamation would begin without delay if a well is determined to be unproductive, or upon completion of commercial production. Any wildlife species inhabiting the project areas are likely to adapt to changing conditions, and continue to persist without adverse impact.

3.4 SOILS

The proposed project areas are located toward the center of the Williston Basin. The Greenhorn Formation, which consists of thin limestone and dark gray to black organic-rich shale, is found from the surface to a depth of approximately 4,000 feet. The Greenhorn is subdivided into lower and upper intervals of limestone and calcareous shale with a middle interval of shale. Near-surface sediments are of the Tejas Sequence and include deposits of Recent, Pleistocene, or Tertiary age.

3.4.1 Natural Resources Conservation Service Soil Data

The Natural Resources Conservation Service (NRCS 2009) classified soil series present on the well pads and access road areas, and the respective acreages, can be found in Table 6. The acreage shown in Table 6 is based on the spatial extent of soil series combinations derived from NRCS data (Figures 27 through 31), therefore the acreage is approximate and used as a best estimate of the soil series distribution at each of the proposed project areas.

The following descriptions represent individual soil series reported to exist within the proposed project areas (NRCS 2009). Each individual soil series may not exist individually within the project areas but rather in combination with other soil types (Table 6).

3.4.1.1 Armor

The Amor series consists of well drained, moderately permeable soils that are moderately deep over soft sandstone bedrock. They formed in material weathered from stratified soft sandstone, siltstone, and mudstone. These soils are on uplands and have slopes of 0 to 25%. Mean annual temperature is 42°F, and mean annual air precipitation is 15 inches. This soil is commonly cropped to small grains, flax, corn, hay, and grass in a summer fallow rotation. Native vegetation is mid- and short prairie grasses such as green needlegrass (*Nasella viridula*), needle and thread (*Hesperostipa comata*), western wheatgrass (*Pascopyrum smithii*), and blue grama (*Bouteloua gracilis*) (NRCS 2009).

3.4.1.2 Arnegard

The Arnegard series consists of very deep, well or moderately well drained soils formed in calcareous loamy alluvium on upland swales, terraces, fans, and foot slopes. Permeability is moderate. Slopes range from 0 to 25%. Mean annual air temperature is 42°F, and mean annual precipitation is 14 inches. Most areas are cropped to spring wheat, oats, barley, and hay. Native vegetation is mid-, tall, and short grasses such as western wheatgrass, green needlegrass, big bluestem (*Andropogon gerardii*), and blue grama (NRCS 2009).

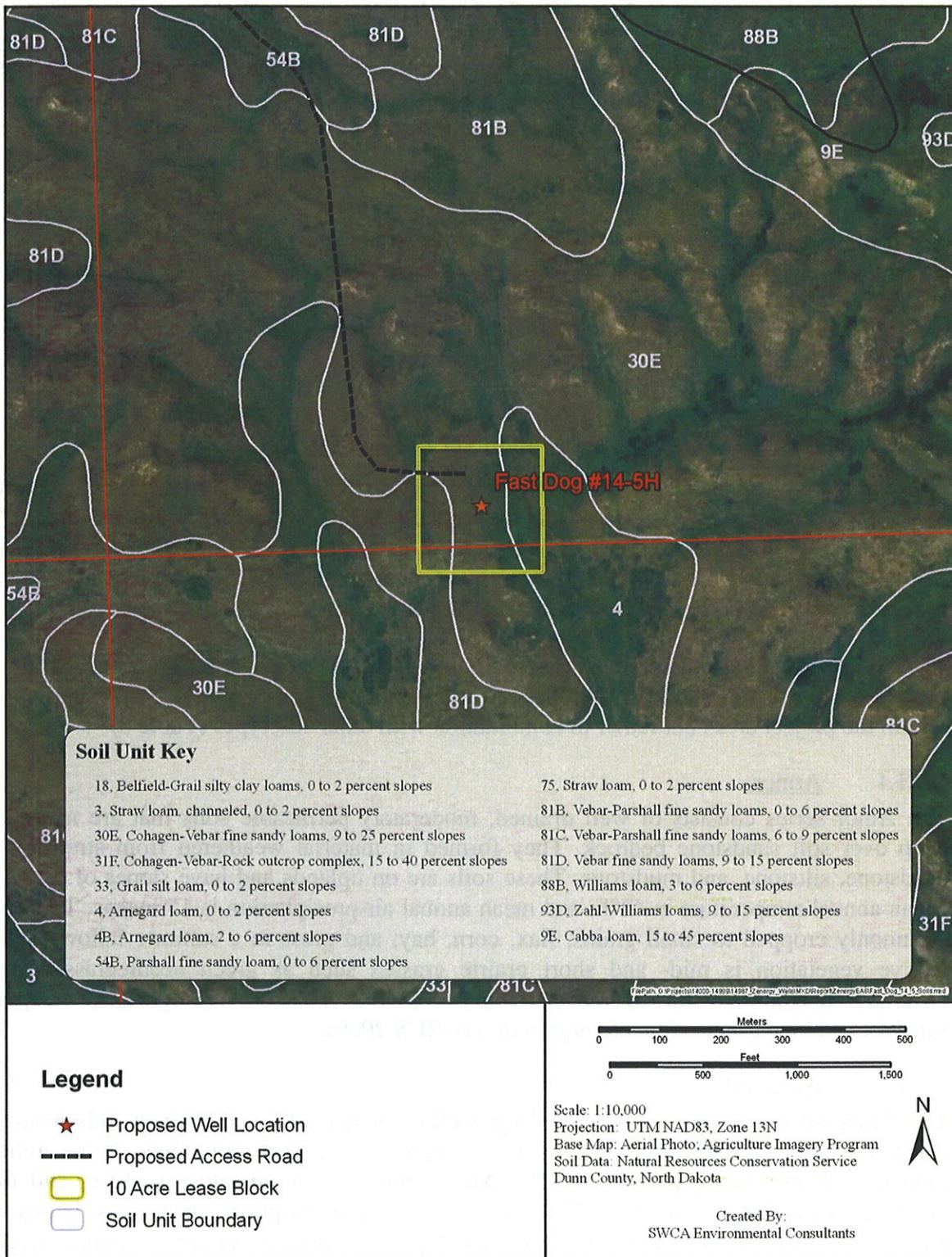


Figure 27. Approximate distribution of soil types within and around Fast Dog #14-5H.

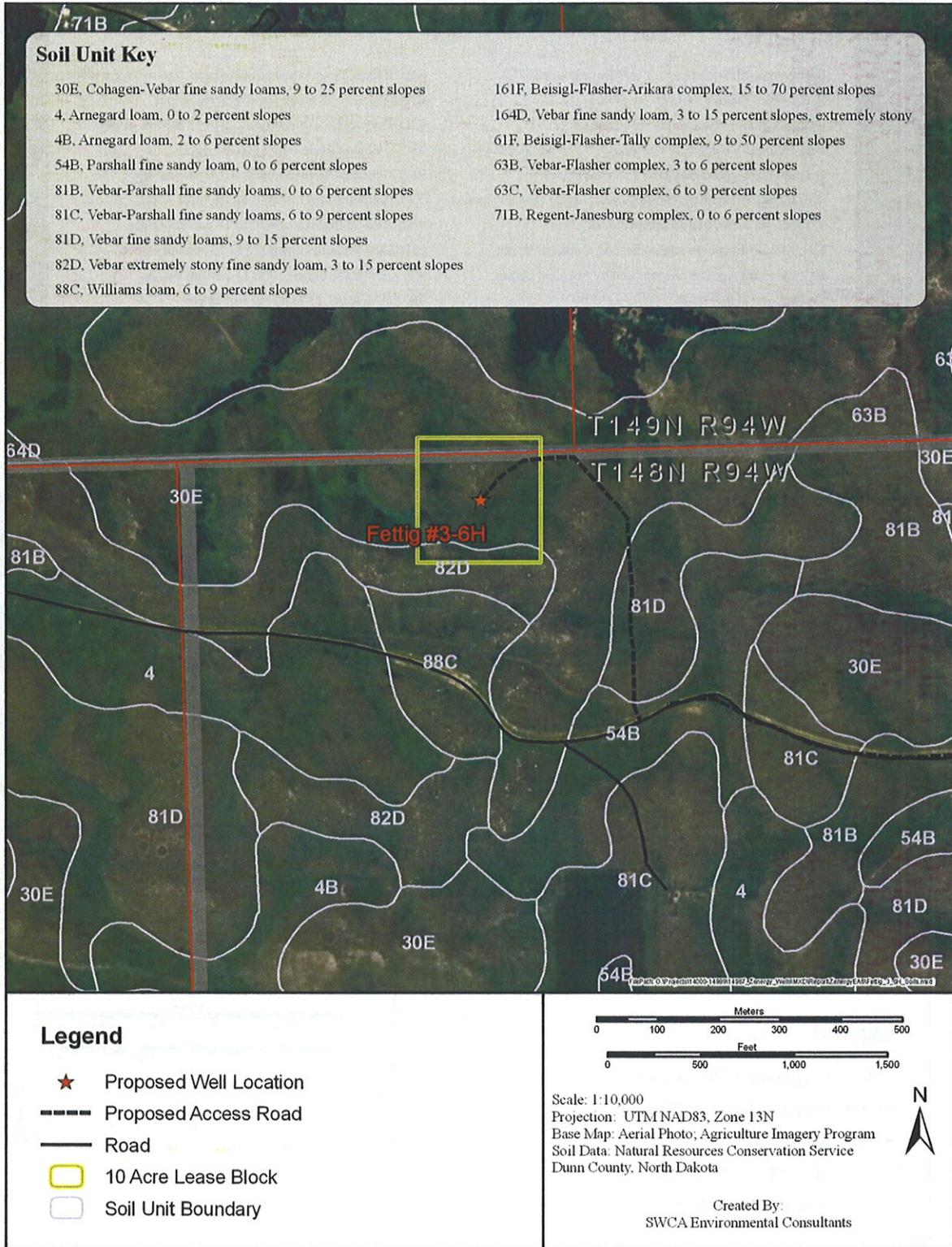


Figure 28. Approximate distribution of soil types within and around Fettig #3-6H.

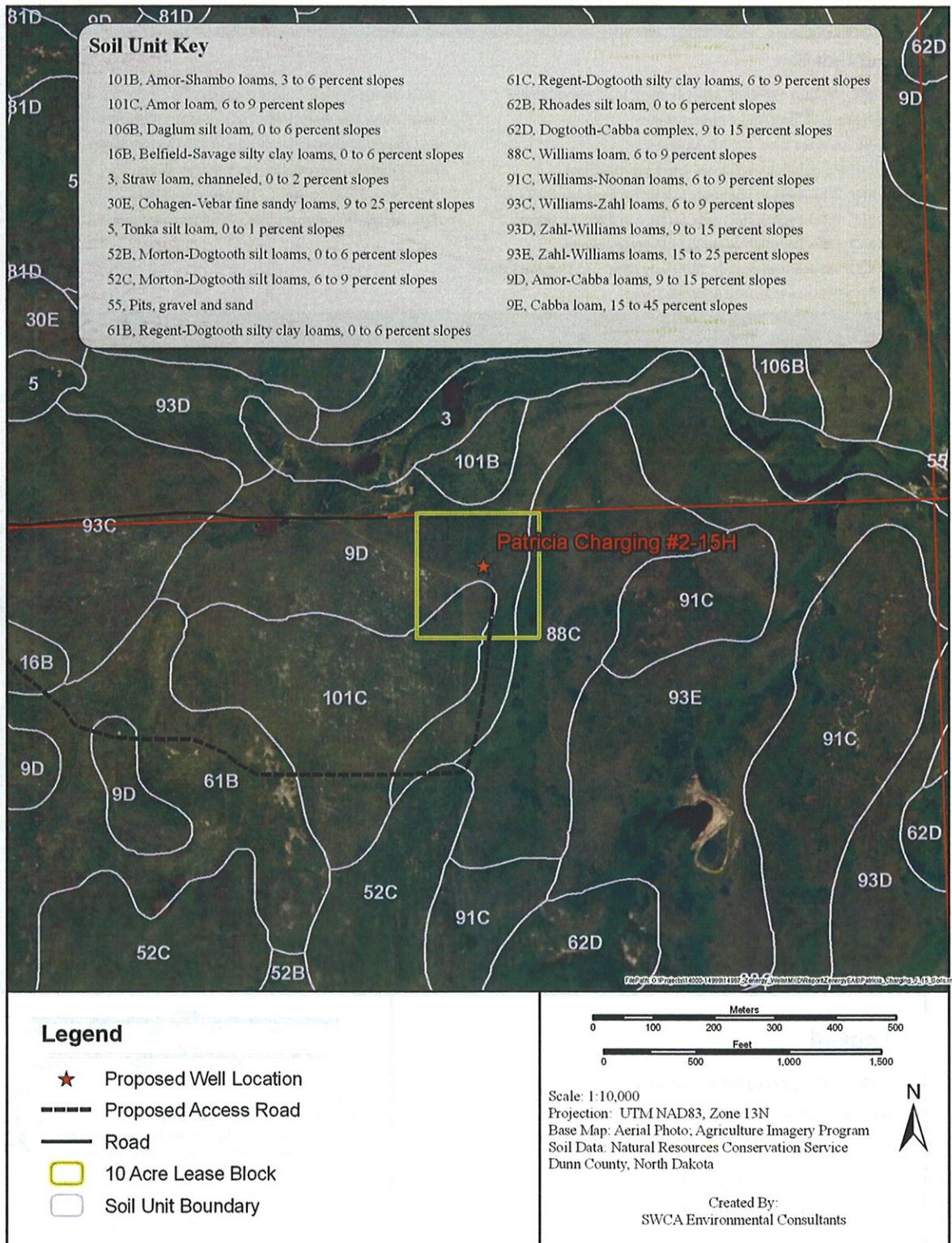


Figure 29. Approximate distribution of soil types within and around Patricia Charging 2 #2-15H.

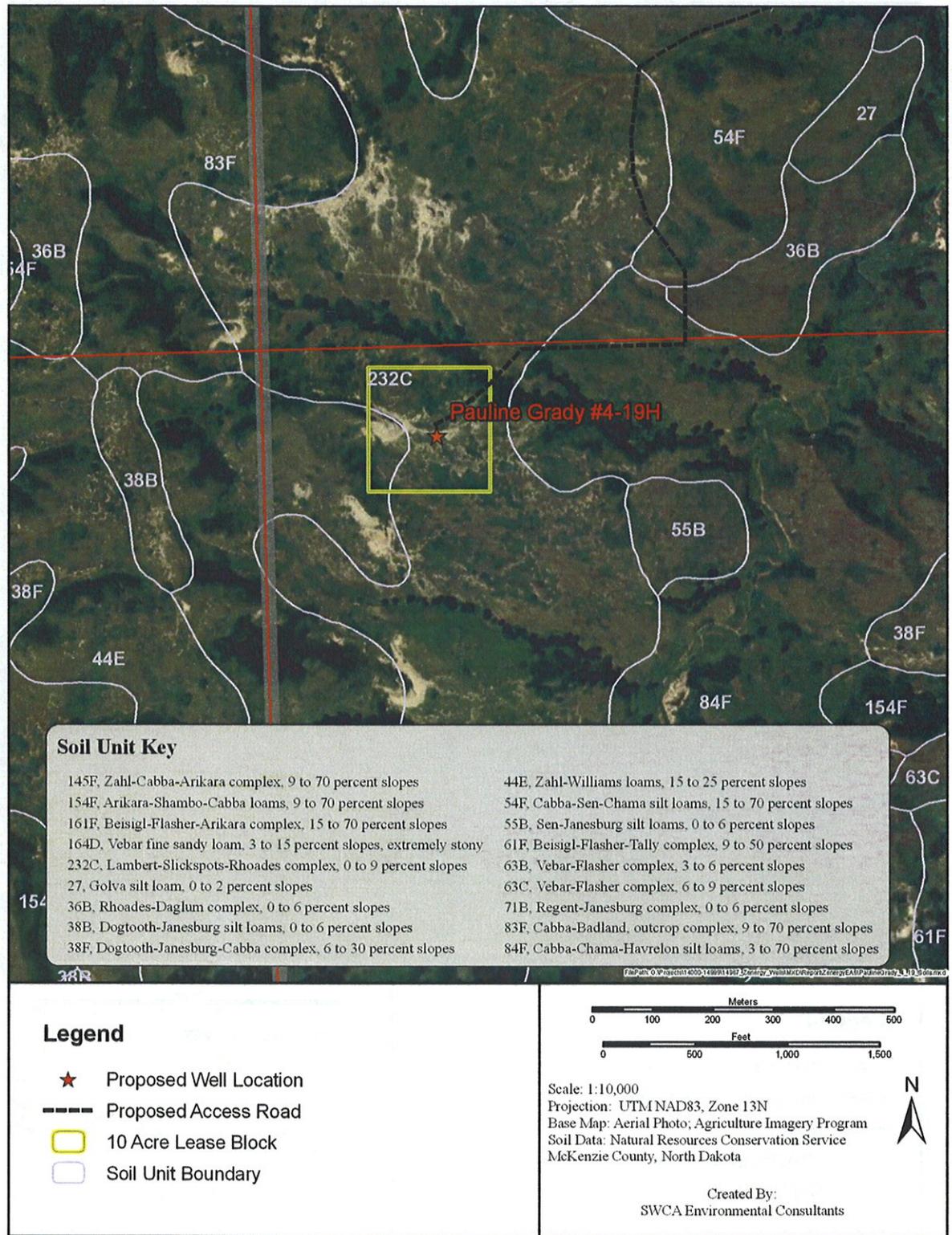


Figure 30. Approximate distribution of soil types within and around Pauline Grady #4-19H.

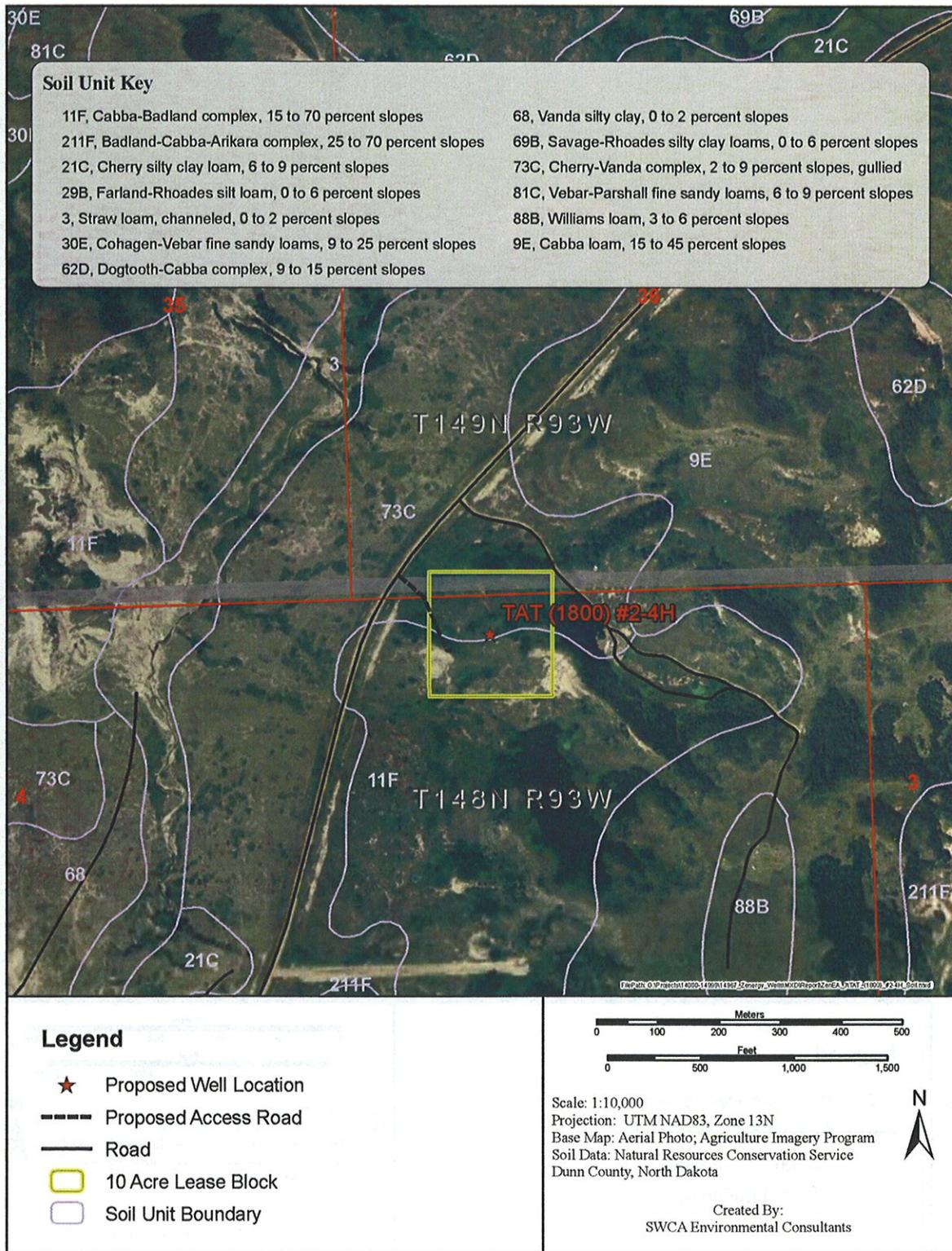


Figure 31. Approximate distribution of soil types within and around TAT (1800) #2-4H.

Table 6. Percentage of the Project Areas Comprised of Specific Soil Types.

Feature	Soil Series	Percentage of Location	Acres
Fast Dog #14-5H			
New Access Road	Cohagen-Vebar fine sandy loams, 9 to 25 percent slopes	46.9%	4.11
New Access Road	Parshall fine sandy loam, 0 to 6 percent slopes	16.6%	1.45
New Access Road	Vebar fine sandy loams, 9 to 15 percent slopes	1.6%	0.14
Well Pad	Arnegard loam, 0 to 2 percent slopes	1.1%	0.09
Well Pad	Cohagen-Vebar fine sandy loams, 9 to 25 percent slopes	33.7%	2.95
Well Pad	Vebar fine sandy loams, 9 to 15 percent slopes	0.1%	0.01
Fettig #3-6H			
New Access Road	Cohagen-Vebar fine sandy loams, 9 to 25 percent slopes	28.08%	1.80
New Access Road	Parshall fine sandy loam, 0 to 6 percent slopes	3.17%	0.20
New Access Road	Vebar fine sandy loams, 9 to 15 percent slopes	19.72%	1.27
Well Pad	Cohagen-Vebar fine sandy loams, 9 to 25 percent slopes	49.04%	3.16
Patricia Charging 2 #2-15H			
New Access Road	Amor loam, 6 to 9 percent slopes	10.97%	1.00
New Access Road	Amor-Cabba loams, 9 to 15 percent slopes	18.88%	1.72
New Access Road	Belfield-Savage silty clay loams, 0 to 6 percent slopes	7.60%	0.69
New Access Road	Morton-Dogtooth silt loams, 6 to 9 percent slopes	3.68%	0.34
New Access Road	Regent-Dogtooth silty clay loams, 0 to 6 percent slopes	20.85%	1.90
New Access Road	Williams loam, 6 to 9 percent slopes	2.14%	0.19
Well Pad	Amor loam, 6 to 9 percent slopes	6.18%	0.56
Well Pad	Amor-Cabba loams, 9 to 15 percent slopes	29.69%	2.71
Pauline Grady #4-9H			
New Access Road	Beisigl-Flasher-Tally complex, 9 to 50 percent slopes	5.08%	1.54
New Access Road	Cabba-Badland, outcrop complex, 9 to 70 percent slopes	1.14%	0.35
New Access Road	Cabba-Chama-Havrelon silt loams, 3 to 70 percent slopes	16.21%	4.91
New Access Road	Cabba-Sen-Chama silt loams, 15 to 70 percent slopes	19.22%	5.83
New Access Road	Daglum-Belfield complex, 0 to 6 percent slopes	10.56%	3.20
New Access Road	Dogtooth-Janesburg-Cabba complex, 6 to 30 percent slopes	2.09%	0.63
New Access Road	Harriet silt loam, 0 to 2 percent slopes	1.16%	0.35
New Access Road	Lambert-Slickspots-Rhoades complex, 0 to 9 percent slopes	20.48%	6.22
New Access Road	Rhoades-Daglum complex, 0 to 6 percent slopes	3.66%	1.11

Feature	Soil Series	Percentage of Location	Acres
New Access Road	Vebar-Flasher complex, 6 to 9 percent slopes	9.84%	2.99
Well Pad	Cabba-Sen-Chama silt loams, 15 to 70 percent slopes	0.07%	0.02
Well Pad	Lambert-Slickspots-Rhoades complex, 0 to 9 percent slopes	10.48%	3.18
TAT (1800) #2-4H			
New Access Road	Cherry-Vanda complex, 2 to 9 percent slopes, gullied	12.6%	0.50
New Access Road	Cabba-Badland complex, 15 to 70 percent slopes	5.1%	0.20
Well Pad	Cherry-Vanda complex, 2 to 9 percent slopes, gullied	42.4%	1.68
Well Pad	Cabba-Badland complex, 15 to 70 percent slopes	39.9%	1.58

3.4.1.3 Arikara

The Arikara series consists of very deep, well drained soils found on wooded slopes. Permeability is moderate, with slopes ranging from approximately 9 to 70%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 15 inches and mean annual air temperature is approximately 40°F. This soil type is used most often for woodland grazing. Native vegetation species common to this soil type include bur oak (*Quercus macrocarpa*), green ash (*Fraxinus pennsylvanica*), quaking aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), and Rocky Mountain juniper (*Juniperus scopulorum*) (NRCS 2009).

3.4.1.4 Badlands (Miscellaneous Area)

Miscellaneous areas have essentially no soil and support little or no vegetation. This can be a result of active erosion, washing by water, unfavorable soil conditions, or human activities. Some miscellaneous areas can be made productive but only after major reclamation efforts.

Badlands are moderately steep to very steep barren lands dissected by many intermittent drainage channels. Ordinarily, the areas are not stony. Badlands are most common in semiarid and arid regions where streams cut into soft geologic material. Local relief generally ranges between 10 and 200 meters. Potential runoff is very high, and erosion is active (NRCS 2009).

3.4.1.5 Belfield

The Belfield series consists of deep to very deep, well to moderately well drained, very slowly permeable soils found on upland flats, terraces, and swales with slopes ranging from approximately 0 to 9%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 15 inches and mean annual air temperature is approximately 43°F. This soil type is largely used for rangeland foraging. Native vegetation species common to this soil type include western wheatgrass, blue grama, and green needlegrass (NRCS 2009).

3.4.1.6 Beisigle

The Beisigle series consists of moderately deep, somewhat excessively drained, rapidly permeable soils on uplands. They formed in sandy materials weathered from soft sandstone. Slopes range from 0 to 50%. Mean annual air temperature is 43°F, and mean annual

precipitation is 15 inches. Most areas of Beisigle soils are used for native range. Some are used for hay, pasture, and cultivated crops. Native vegetation includes needle and thread, prairie sandreed (*Calamovilfa longifolia*), little bluestem (*Schizachyrium scoparium*), and blue grama (NRCS 2009).

3.4.1.7 Cabba

The Cabba series consists of shallow, well drained, moderately permeable soils found on hills, escarpments, and sedimentary plains. The soil slopes broadly range between 2 and 70%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 16 inches and mean annual air temperature is approximately 43°F. The most common vegetation species found on this soil type are little bluestem, green needlegrass, and other various herbs, forbs, and shrub species (NRCS 2009).

3.4.1.8 Chama

The Chama series consists of well drained soils formed in materials weathered from soft siltstone, mudstone, and shale on uplands. These soils are moderately or moderately slowly permeable. Slopes range from 0 to 45%. Mean annual air temperature is 42°F, and mean annual precipitation is 15 inches. These soils are cropped to small grains, mostly wheat; a significant acreage is in rangeland. The native vegetation is principally western wheatgrass, needle and thread, and blue grama (NRCS 2009).

3.4.1.9 Cherry

The Cherry series consists of very deep, well drained, moderately slowly or slowly permeable soils that formed in alluvium on fans, foot slopes, dissected uplands and terraces. Slopes range from 0 to 25%. Mean annual air temperature is 42°F, and mean annual precipitation is 14 inches. Potential native vegetation is western wheatgrass, blue grama, green needlegrass, needle and thread, and a variety of forbs and shrubs (NRCS 2009).

3.4.1.10 Cohagen

The Cohagen series consists of shallow, well to excessively drained soils formed in materials weathered from soft sandstone bedrock on uplands. These soils have moderate or moderately rapid permeability. Slopes range from 3 to 70%. Mean annual air temperature is about 42°F, and mean annual precipitation is about 16 inches. Potential native vegetation includes bluestem, needle and thread, prairie sandreed, upland sedges, and western wheatgrass (NRCS 2009).

3.4.1.11 Daglun

The Daglum series consists of deep to very deep, moderately well to well drained, slow to very slowly permeable soils found on swales on upland terraces and foot slopes. Slopes range from approximately 0 to 9%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 16 inches and mean annual air temperature is approximately 42°F. This soil type is used for rangeland foraging and cultivation of small grains. Native vegetation species common to this soil type include western wheatgrass, blue grama, and green needlegrass (NRCS 2009).

3.4.1.12 Dogtooth

The Dogtooth series consists of moderately deep, well drained, very slowly permeable soils found in uplands where the predominant slope is between 0 and 25%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 15 inches and mean annual air temperature is approximately 42°F. The most common vegetation species found on this soil type are range and pasture grasses including western wheatgrass and blue grama (NRCS 2009).

3.4.1.13 Farland

The Farland series consists of very deep, well drained soils that formed in stratified alluvium on terraces, valley foot slopes, and fans on uplands. Permeability is moderate or moderately slow. Slope ranges from 0 to 20%. Mean annual precipitation is about 14 inches, and mean annual temperature is about 42°F. Potential native vegetation includes needle and thread, green needlegrass, western wheatgrass, and blue grama (NRCS 2009).

3.4.1.14 Flasher

The Flasher series consists of shallow, somewhat excessively drained soils formed in soft sandstone on side slopes, shoulder slopes, and summits of hills and ridges on uplands and side slopes of valleys. Permeability is moderately rapid or rapid. Slopes range from 3 to 70%. Mean annual precipitation is about 14 inches and mean annual temperature is about 42°F. Used mainly for range and pasture, the native vegetation includes prairie sandreed, blue grama, little bluestem, upland sedges, some creeping cedar, and other shrubs (NRCS 2009).

3.4.1.15 Golva

The Golva series consists of deep to very deep, well drained, moderately permeable soils that formed in silty alluvium. These soils are on fans and terraces, and in shallow concave swales. Slope ranges from 0 to 15%. Mean annual air temperature is 42°F, and mean annual precipitation is 14 inches. Used mainly for small grains, some row crops, hay, and pasture. Native vegetation is mid- and short prairie grasses, such as blue grama, green needlegrass, western wheatgrass, and some forbs (NRCS 2009).

3.4.1.16 Grail

The Grail series consists of deep to very deep, slowly permeable soils which are well to moderately well drained. This soil type is found on uplands with slopes ranging from 0 to 15%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 15 inches and mean annual air temperature is approximately 42°F. This soil type is largely used for cultivated crops. Native vegetation species common to this soil type include western wheatgrass, big bluestem (*Andropogon gerardii*), and green needlegrass (NRCS 2009).

3.4.1.17 Havrelon

The Havrelon series consists of very deep, well and moderately well drained, moderately permeable soils that formed in loamy alluvium. These soils are on floodplains of major streams and tributaries and have slopes of 0 to 6%. Mean annual air temperature is 42°F, and mean annual precipitation is 16 inches. Cultivated areas are used for growing small grains,

hay, corn, and pasture. Some areas are irrigated and cropped to sugar beets, potatoes, corn, and alfalfa. Native grasses include big bluestem, green needlegrass, and western wheatgrass. Trees, including green ash, cottonwood, boxelder, and chokecherry, are along the stream channels (NRCS 2009).

3.4.1.18 Janesburg

The Janesburg series consists of moderately deep, well drained soils formed in residuum weathered from alkaline, soft shale, siltstone and mudstone. These soils have slow or very slow permeability. They are on upland plains and have slopes of 0 to 25%. Mean annual air temperature is about 42°F, and mean annual precipitation is about 15 inches. Used for range, pasture, and small grains. Native vegetation is western wheatgrass, blue grama, green needlegrass, sedges, and forbs (NRCS 2009).

3.4.1.19 Lambert

The Lambert series consists of very deep, well drained soils formed in recent alluvium on uplands, fans and terraces. These soils are moderately slowly permeable. They are on 0 to 65% slopes. Mean annual precipitation is about 14 inches and mean annual air temperature is about 42°F. The moderately sloping areas are about equally divided between cropland and native pasture. The steep areas are all range. Uncultivated areas are chiefly in western wheatgrass, blue grama, threadleaf sedge (*Carex filifolia*), and needle and thread grass (NRCS 2009).

3.4.1.20 Morton

The Morton series consists of moderately deep, well drained, moderately permeable soils that formed in material weathered from soft calcareous silty shales, siltstones, and fine grained sandstones. These soils are on uplands and have slopes of 0 to 15%. Mean annual air temperature is 42°F, and mean annual precipitation is 15 inches. Cultivated areas are used for growing small grains, flax, corn, hay, and pasture. Native vegetation is mid- and short-prairie grasses such as western wheatgrass, green needlegrass, and blue grama (NRCS 2009).

3.4.1.21 Noonan

The Noonan series consists of very deep, well drained or moderately well drained soils formed in till. Permeability is moderate on the surface and slow in the Btn horizons. These soils are on till plains and uplands and have slopes of 0 to 15%. Mean annual air temperature is 39°F, and mean annual precipitation is 14 inches. Used for spring-seeded small grains and pasture. Native vegetation includes western wheatgrass and blue grama (NRCS 2009).

3.4.1.22 Parshall

The Parshall series consists of very deep, well or moderately well drained, moderately rapidly permeable soils formed in alluvium. These soils are on terraces, outwash plains, and upland swales and have slopes of 0 to 25%. Mean annual air temperature is 42°F, and mean annual precipitation is 16 inches. Most areas are cropped to small grains, flax, tame grass, and alfalfa. Native vegetation includes medium and short prairie grasses such as needle and thread, and some legumes (NRCS 2009).

3.4.1.23 Regent

The Regent series consists of moderately deep, well drained, slowly permeable soils formed in residuum weathered from alkaline soft shale, siltstone or mudstone. These soils are on uplands and have slopes of 0 to 45%. Mean annual air temperature is 42°F, and mean annual precipitation is 16 inches. Cultivated areas are used for growing small grains, flax, hay, and pasture. The native vegetation includes mid- and short grasses such as western wheatgrass, green needle grass, blue grama, and some forbs and upland sedges (NRCS 2009).

3.4.1.24 Rhoades

The Rhoades series consists of deep to very deep, well to moderately well drained, very slowly permeable soils found on swales and uplands with slopes ranging from approximately 0 to 25%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 16 inches and mean annual air temperature is 42°F. This soil type is largely used for rangeland foraging. Native vegetation species common to this soil type include western wheatgrass and blue grama (NRCS 2009).

3.4.1.25 Rock Outcrop

Rock outcrops consist of exposures of bare bedrock, other than lava flows and rock-lined pits. If needed, map units can be named according to the kind of rock: Rock outcrop, chalk; Rock outcrop, limestone; Rock outcrop, gypsum. Many rock outcrops are too small to be delineated as areas on soil maps but can be shown by spot symbols. Some areas are large, broken by only small areas of soil. Most rock outcrops are hard rock, but some are soft (NRCS 2009).

3.4.1.26 Savage

The Savage series consists of very deep, well drained soils that formed in silty alluvium, loess, or in glacio-fluvial or glacio-lacustrine material. These soils are on alluvial fans, stream terraces, drainage ways, sedimentary plains, and till plains. Slopes are 0 to 25%. Mean annual precipitation is 16 inches, and the mean annual air temperature is 42°F. Savage soils are used mainly for dryland crops. Some areas are used for irrigated crops and as rangeland. The potential native vegetation is mainly bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass, green needle grass, and perennial forbs (NRCS 2009).

3.4.1.27 Sen

The Sen series consists of well drained, moderately permeable soils formed in calcareous siltstone or shale. They are moderately deep to soft bedrock. These soils are on upland plains and have slopes of 0 to 25%. Mean annual air temperature is 42°F, and mean annual precipitation is 15 inches. This soil type is used for cultivation of small grains in a crop-summer fallow rotation. Native vegetation is mid- and short prairie grasses such as green needle grass, needle and thread, western wheatgrass, blue grama, and a variety of forbs (NRCS 2009).

3.4.1.28 Shambo

The Shambo series consists of deep to very deep, well drained, moderately permeable soils formed in calcareous alluvium, mainly from soft sandstone, mudstone, and shale. These soils are on terraces and fans along stream valleys and fans on uplands. Slopes range from 0 to

35%. Mean annual air temperature is 42°F, and mean annual precipitation is 15 inches. These soils are cropped to small grains, hay, and pasture. Some areas are irrigated and some are in native rangeland. Native vegetation includes green needle grass, needle and thread, western wheatgrass, Junegrass (*Koeleria macrantha*), blue grama, and a variety of forbs (NRCS 2009).

3.4.1.29 Slickspots

Slick spots are areas having a puddled or crusted, very smooth, nearly impervious surface. The underlying material is dense and massive. The material ranges from extremely acid to very strongly alkaline and from sand to clay texture (NRCS 2009).

3.4.1.30 Straw

The Straw series consists of very deep, moderately well to well drained soils formed in alluvium. These soils are on floodplains, stream terraces, and drainageways. Slopes are 0 to 8%. Mean annual precipitation is approximately 16 inches, and mean annual air temperature is 43°F. Straw soils are used mainly for dryland cropland, irrigated cropland, and range. Potential native vegetation includes mainly rough fescue (*Festuca* sp.), western wheatgrass, needle and thread, little bluestem, bluebunch wheatgrass, green needle grass, forbs, and shrubs (NRCS 2009).

3.4.1.31 Tally

The Tally series consists of very deep, well drained soils formed in material derived from aeolian deposits, alluvium, or glacio-fluvial deposits. These soils are on stream terraces, alluvial fans, till plains, drainageways, hills, sedimentary plains, and outwash plains. Slopes are 0 to 45%. Mean annual precipitation is about 15 inches, and mean annual temperature is about 43°F. Potential native vegetation is mainly western wheatgrass, needle and thread, prairie junegrass, prairie sandreed, forbs, and shrubs (NRCS 2009).

3.4.1.32 Tonka

The Tonka series consists of very deep, poorly drained, slowly permeable soils formed in local alluvium over till or glacio-lacustrine deposits. These soils are in closed basins and depressions on till and glacial lake plains and have slopes of 0 to 1%. Mean annual air temperature is 42°F, and mean annual precipitation is 20 inches. This series is used for small grains, hay, and pasture. Native vegetation is tall grasses, sedges, and rushes (NRCS 2009).

3.4.1.33 Vanda

The Vanda series consists of very deep, well drained soils that formed in alluvium derived mainly from semi-consolidated sedimentary bedrock or from glacio-lacustrine or glacio-fluvial deposits. These soils are on alluvial fans, lake plains, sedimentary plains, drainageways, and stream terraces. Slopes are 0 to 15%. Mean annual precipitation is about 12 inches and mean annual air temperature is about 43°F. This soil type is used mainly for range. The potential native vegetation is largely western wheatgrass, Nuttall alkaligrass (*Puccinellia nuttalliana*), big sagebrush (*Artemisia tridentata*), blue grama, alkali sacaton (*Sporobous airoides*), forbs, and shrubs (NRCS 2009).

3.4.1.34 Vebar

The Vebar series consists of well drained, moderately deep, moderately rapidly permeable soils formed in residuum weathered from soft calcareous sandstone. These soils are on uplands and have slope ranging from 0 to 65%. Mean annual air temperature is 42°F, and mean annual precipitation is 16 inches. These soils are cropped to corn and small grains. Some is used for hay or pasture. Native grasses are needle and thread and prairie sandreed (NRCS 2009).

3.4.1.35 Williams

The Williams series consists of very deep, slowly permeable, well drained soils found on glacial till plains and moraines with slopes at approximately 0 to 35%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches and mean annual air temperature is approximately 40°F. This soil type is largely used for cultivation. Native vegetation species common to this soil type include western wheatgrass, needle and thread, blue grama, and green needlegrass (NRCS 2009).

3.4.1.36 Zahl

The Zahl series consists of very deep, slowly permeable, well drained soils found on glacial till plains, moraines, and valley side slopes of approximately 1 to 60%. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches and mean annual air temperature is approximately 40°F. This soil type is largely used for rangeland foraging. Native vegetation species common to this soil type include western wheatgrass, little bluestem, and needle and thread (NRCS 2009).

3.4.2 Field-Derived Soil Data

Soil data derived from on-site excavated soil pits, including the matrix value, hue, chroma, and color name are summarized in Table 7. Additionally, redoximorphic features (i.e., reduced/oxidized iron or manganese) deposits and soil texture were noted at each soil pit. A Munsell Soil Color Chart was used to determine the color of moist soil samples.

The K Factor indicates the vulnerability of material less than 2 millimeters in size to sheet and rill erosion by water. Values can range from 0.02 (i.e., lowest erosion potential) to 0.69 (i.e., greatest erosion potential). T represents the maximum volume of soil loss, measured in tons/acre/year, which could occur and still allow for maintenance of high levels of crop production.

Table 7. Soil Data Obtained through the Excavation of Soil Pits within the Proposed Project Area.

Feature	Pit Depth (inches)	Soil Matrix Color (color name)	Redoximorphic Feature Color	Texture	Slope (°)	K Factor
Fast Dog #14-5H						
Well Pad	0-16	10YR 3/2 (very dark grayish-brown)	None Observed	Loam	1-3	0.20
Fettig #3-6H						
Well Pad	0-16	10YR 2/1 (black)	None Observed	Loam	3-5	0.20
Patricia Charging 2 #2-15H						
Well Pad	0-7	10YR 3/2 (very dark grayish-brown)	None Observed	Silt Loam	1-3	0.24
Well Pad	7-16	10YR 4/2 (dark grayish-brown)	None Observed	Silty Clay Loam	1-3	0.24
Access Road	0-6	10YR 4/2 (dark grayish-brown)	None Observed	Silty Loam	1-5	0.24
Access Road	6-16	10YR 2/1 (black)	None Observed	Clay	1-5	0.24
Pauline Grady #4-19H						
Well Pad	0-16	2.5Y 4/2 (dark grayish-brown)	None Observed	Clay Loam	1-5	0.32
TAT (1800) #2-4H						
Well Pad	0-14	10YR 4/1 (dark gray)	None Observed	Clay Loam	1-5	0.32
Well Pad	14-16	2.5Y 6/2 (light brownish-gray)	None Observed	Clay Loam	1-5	0.32
Access Road	0-10	10YR 3/2 (very dark grayish-brown)	None Observed	Clay Loam	1-5	0.32
Access Road	10-16	10YR 6/2 (light brownish-gray)	None Observed	Silt Loam	1-5	0.32

3.4.3 Conclusions Regarding Soil Erosion Potential

3.4.3.1 Fast Dog #14-5H

1. The Fast Dog #14-5H well pad and proposed new access road are both dominated (72.1% and 96.7%, respectively) by a Cohagen-Vebar fine sandy loam (Table 6).
2. This soil type may have highly variable run-off depending on the slope, which ranges between 0 and 70% (NRCS 2009).
3. Reclamation of vegetative communities should be easily implemented due to the affinity of native grassland species to this soil type (NRCS 2009).

4. This location has a Soil Erodibility Factor (K) of 0.20. Using the Revised Universal Soil Loss Equation (RUSLE), there could be 3.33 tons/acre/year of soil loss from the site if it is not properly managed to prevent such loss. 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.
5. Both soil series are capable of supporting native short- and mid-grass prairie vegetative communities, which should substantially increase the probability for successful and permanent reclamation (NRCS 2009).

3.4.3.2 Fettig #3-6H

1. The Fettig #3-6H well pad site is dominated (100%) by the Cohagen-Vebar complex and the majority (93.9%) of the new access road would be constructed on Cohagen and Vebar fine sandy loams (Table 6).
2. The Cohagen soil series is found on slopes typically ranging from 3 to 70%. The Vebar soil series is found on slopes ranging from 0 to 65% (NRCS 2009).
3. Both soil series are capable of supporting native short- and mid-grass prairie vegetative communities, which should substantially increase the probability for successful and permanent reclamation (NRCS 2009).
4. This location has a Soil Erodibility Factor (K) of 0.20. Using the RUSLE, there could be 3.33 tons/acre/year of soil loss from the site if it is not properly managed to prevent such loss. 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.

3.4.3.3 Patricia Charging 2 #2-15H

1. The Patricia Charging 2 #2-15H well pad is dominated (82.9%) by an Amor-Cabba loam; the new access road would be constructed on several different loams, including those of the Amor, Cabba, Regent, and Dogtooth series (Table 6).
2. The soils found at the well pad and access road sites typically have slopes ranging from 0 to 70%. (NRCS 2009).
3. These soils are capable of supporting native prairie vegetative communities, which should substantially increase the probability for successful and permanent reclamation (NRCS 2009).
4. This location has a Soil Erodibility Factor (K) of 0.24. (T-Factor: 3 Tons/Acre/Year.) Using the RUSLE, there could be 3.99 tons/acre/year of soil loss from the site if it is not properly managed to prevent such loss. 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.

3.4.3.4 Pauline Grady #4-19H

1. The Pauline Grady #4-19H well pad site is dominated (99.4%) by a Lambert-Slickspots-Rhoades complex. The proposed new access road includes a variety of soil

types from loams to outcrop complexes and a range of other erosion-prone complexes (Table 6).

2. The soils found at the well pad and access road sites typically have slopes ranging from 0 to 70% (NRCS 2009).
3. Most of the soils are known to support native grassland vegetation including short-, mid-, and tall-grass prairies, which should substantially increase the probability for successful and permanent reclamation, provided care is taken in areas where the soils are less than ideal for vegetative growth (NRCS 2009).
4. This location has a Soil Erodibility Factor (K) of 0.32. Using the RUSLE, there could be 2.66 tons/acre/year of soil loss from the site if it is not properly managed to prevent such loss. 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.

3.4.3.5 TAT (1800) #2-4H

1. The soils on the TAT (1800) #2-4H well pad and proposed access road sites include both Cherry-Vanda and Cabba-Badland complexes (Table 6).
2. The well pad and access road soils are found on slopes that range from 2 to 70% (NRCS 2009).
3. The Cabba and Cherry soils are known to support native grassland vegetation including short-, mid-, and tall-grass prairies, which should substantially increase the probability for successful and permanent reclamation. However, the potential for erosion is high in the accompanying Badland areas and erosion is active. Additionally, based on the salt-tolerant native vegetation, the Vanda soils indicate alkaline or saline tendencies (NRCS 2009).
4. This location has a Soil Erodibility Factor (K) of 0.32. Using the RUSLE, there could be 1.73 tons/acre/year of soil loss from the site if it is not properly managed to prevent such loss. 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.

3.4.3.6 General

Due to the presence of loamy soils and minimal slopes within each of the five proposed project areas, no limitations on construction activities within the project areas are anticipated. The soil types are not expected to create unmanageable erosion issues or interfere with reclamation of any area. Proven BMPs are known to significantly reduce erosion of various types of soil, including those in the project areas (BLM Instruction Memorandum 2004-124, www.blm.gov/bmp; BLM and USFS 2007; Grah 1997). Topsoil stripped from areas of new construction would be retained for use during reclamation. Any areas stripped of vegetation during construction would be reseeded once construction activities have ceased. The implementation of BMPs by the operator is projected to reduce and maintain negligible levels of erosion.

3.5 VEGETATION AND INVASIVE SPECIES

The proposed project areas are located in the Missouri Plateau Ecoregion (Missouri Slope) which is a western mixed-grass and short-grass prairie ecosystem (Bryce *et al.* 1998). Native grasses include big blue stem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), blue grama (*Bouteloua gracilis*), side-oats grama (*Bouteloua curtipendula*), green needlegrass (*Nassella viridula*), and western wheatgrass (*Pascopyrum smithii*). Common wetland vegetation includes various sedge species (*Carex* spp.), bulrush (*Scirpus* spp.), and cattails (*Typha* spp.). Common plant species found in woody draws, coulees, and drainages include chokecherry (*Prunus virginiana*), silver buffaloberry (*Shepherdia argentea*), and western snowberry (*Symphoricarpos occidentalis*).

3.5.1.1 Fast Dog #14-5H

Vegetation noted at the Fast Dog #14-5H project area includes little bluestem, fringed sagewort (*Artemisia frigida*), needle-and-thread (*Hesperostipa comata*), and purple coneflower (*Echinacea angustifolia*).

3.5.1.2 Fettig #3-6H

Vegetation noted at the Fettig #3-6H project area includes needle-and-thread, fringed sagewort, little bluestem, creeping juniper (*Juniperus horizontalis*), chokecherry, and Russian knapweed (*Centaurea repens*).

3.5.1.3 Patricia Charging 2 #2-15H

Vegetation noted at the Patricia Charging 2 #2-15H project area includes field brome (*Bromus arvensis*), sweet clover (*Melilotus officinalis*), alfalfa (*Medicago* sp.), Kentucky bluegrass (*Poa pratensis*), green needlegrass, purple coneflower, fringed sagewort, and western snowberry. Russian knapweed, an invasive species, was also found on the site.

3.5.1.4 Pauline Grady #4-19H

Vegetation noted at the Pauline Grady #4-19H project area is dominated by green needlegrass and includes fringed sagewort and blue grama.

3.5.1.5 TAT (1800) #2-4H

Vegetation noted at the TAT (1800) #2-4H project area includes green needlegrass, western snowberry, little bluestem, downy hawthorn (*Crataegus mollis*), silver buffaloberry, and purple coneflower.

Noxious weeds have the potential to detrimentally affect public health, ecological stability, and agricultural practices. The North Dakota Century Code (Chapter 63-01.1) recognizes 12 species as noxious. Five of these species are known to exist in Dunn County and seven in McKenzie County. Table 8 indicates the total acreage for each noxious species by county. Additional information is available from the NRCS Plants Database for North Dakota at <http://www.plants.usda.gov>.

Table 8. Occupied Area for Recognized Noxious Weeds in Dunn and McKenzie Counties, North Dakota.

Common Name	Scientific Name	County	
		Dunn (acres)	McKenzie (acres)
absinth wormwood	<i>Artemisia absinthium</i>	38,600	43
Canada thistle	<i>Cirsium arvense</i>	32,800	4,300
Dalmatian toadflax	<i>Linaria dalmatica</i>	2	--
diffuse knapweed	<i>Centaurea diffusa</i>	--	--
field bindweed	<i>Convolvulus arvensis</i>	33,000	--
leafy spurge	<i>Euphorbia esula</i>	10,500	1,300
musk thistle	<i>Carduus nutans</i>	2	2
purple loosestrife	<i>Lythrum salicaria</i>	--	--
Russian knapweed	<i>Acroptilon repens</i>	--	1
salt cedar	<i>Tamarix ramosissima</i>	0	1
spotted knapweed	<i>Centaurea stoebe</i>	--	1
yellow starthistle	<i>Centaurea solstitialis</i>	--	--

Source: North Dakota Department of Agriculture 2007

“Invasive” is a general term used to describe plant species that are not native to a given area, spread rapidly, and have adverse ecological and economic impacts. These species may exhibit high reproductive rates and are usually adapted to occupy a diverse range of habitats otherwise occupied by native species. These species may subsequently out-compete native plant species for resources, causing a reduction in native plant populations and an increase in noxious weed populations.

Evaluation of the existing vegetation during on-site assessments conducted in April, May, and June 2009 indicated no invasive species were present at any of the proposed sites. However, potential disturbance of approximately 64.1 acres and removal of existing vegetation may facilitate the spread of invasive species. The APDs and this EA require the operator to control noxious weeds throughout the project areas. Surface disturbance and vehicular traffic must not take place outside approved ROWs or the well pad. Areas that are stripped of topsoil must be re-seeded and reclaimed at the earliest opportunity. Additionally, certified weed-free straw and seed must be used for all construction, seeding, and reclamation efforts. Prompt and appropriate construction, operation, and reclamation are expected to maintain minimal levels of adverse impacts to vegetation and will reduce the potential establishment of invasive vegetation species.

3.6 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 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 TAT (1800) #2-4H project approximately 11.09 acres were intensively inventoried on November 3, 2008 (Ferris 2009). For the Dakota-3 Fast Dog #14-5H project approximately 28.42 acres were inventoried on August 10-17, 2009 (Lechert and Cooper 2009); for the Dakota-3 Fettig #3-6H project approximately 40.5 acres were inventoried on April 28, 2009 (Cooper *et al.* 2009); for the Dakota-3 Patricia Charging 2 #2-15H project approximately 17.6 acres were inventoried on August 4, 2009 (Higgins and Lechert 2009); and for the Dakota-3 Pauline Grady #4-19H project approximately 39.09 acres were inventoried on August 10, 2009 (Lechert 2009). Two potentially eligible historic properties were located within these project areas that may possess the quality of integrity and meet at least one of the criteria (36 CFR 60.6) for inclusion on the National Register, such that one well pad site was moved and the location of another was changed altogether. As the lead federal agency, and as provided for in 36 CFR 800.5, on the basis of the information

provided, BIA reached determinations of **no historic properties affected** for these undertakings. This determination was communicated to the THPO for the Dakota-3 TAT (1800) #2-4H project on April 3, 2009, and the THPO concurred on April 7, 2009 (see Part 4). The same determination was communicated to the THPO for the other four projects on October 30, 2009; however, no response was received from the THPO within the allotted 30-day comment period for these project areas.

3.7 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 3.7a. 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 elsewhere in the state. More than two-thirds (3,986) of the Reservation population are tribal members.

Table 9: 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 3.7b, 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 10: 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 3.7c. 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 11: Housing Units – 2000 (U.S. Census Bureau 2007 and 2008).

Housing Development	Fort Berthold Reservation	Dunn County	McKenzie County	McLean County	Mountrail County
Existing Housing					
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
Housing Development Statistics					
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 projects are 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.

3.8 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 in federal programs, policies, decisions and operations. Fair treatment means such groups should not bear a disproportionately high share of negative environmental consequences from such undertakings. Meaningful involvement means federal officials actively promote opportunities for public participation and that 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 or pipeline 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 project locations and determination 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 would take place during any such work stoppage, affording an opportunity for all affected parties to assert their interests and contribute to an appropriate resolution, regardless of their home location or tribal affiliation.

The proposed project has not been found to pose significant impacts to any other critical element—air, public health and safety, water, wetlands, wildlife, soils or vegetation—within the human environment. Avoiding or minimizing such impacts also makes unlikely disproportionate impacts to low-income or minority populations. The proposed action offers

many positive consequences for tribal members, while recognizing Environmental Justice concerns. Procedures summarized in this document and in applicable laws, rules and orders are binding and sufficient. No laws, regulations or other requirements have been waived; no compensatory mitigation measures are required.

3.9 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. Each phase of construction and development through production will be monitored by the BLM, BIA, and representatives of the Tribe to ensure the protection of cultural, archaeological, and natural resources. In conjunction with 43 CFR 46.30, 46.145, 46.310, and 46.415, a report will be developed by the BLM and BIA which documents the results of monitoring in order to adapt the projects to eliminate any adverse impact on the environment.

3.10 IRREVERSIBLE AND IRRETRIEVABLE 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 land areas devoted to the disposal of cuttings, soil lost to erosion (i.e., wind and water), unintentionally destroyed or damaged cultural resources, wildlife killed as a result of collisions with vehicles (i.e., construction machinery and work trucks), and energy expended during construction and operation.

3.11 SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Short-term development activities would not detract significantly from the long-term productivity and use of the project areas. The construction of access roads and well pad areas would eliminate any forage or habitat use by wildlife and/or livestock. Any allottees to which compensation for land disturbance is owed will be properly compensated for the loss of land use. The initial disturbance area would decrease considerably once the wells are drilled and non-necessary areas have been reclaimed. Rapid reclamation of the project areas would facilitate revived wildlife and livestock usage, stabilize the soil, and reduce the potential for erosion and sedimentation.

3.12 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 activities are 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. Over the past several years, exploration has accelerated over the Bakken Formation. Most of this exploration has taken place outside the Reservation boundary on fee land, but for purposes of cumulative impact analyses, land ownership and the Reservation boundary are immaterial. Although it is the dominant activity currently taking place in the area, oil and gas development is not expected to have more than a minor cumulative effect on land use patterns.

Two active wells are found within 1 mile of the project location (Table 13). There are 53, 288, and 1,739 oil and gas wells (active, confidential, and permitted) within 5, 10, and 20 miles, respectively, of the proposed project areas (Tables 14 through 16; Figure 32).

Table 12. Confidential, Active, and Permitted Wells within a 1-mile Radius of the Project Areas.

	Fast Dog #14-5H		Fettig #3-6		Patricia Charging 2 #2-15H		Pauline Grady #4-19H		TAT(1800) #2-4H	
	On	Off	On	Off	On	Off	On	Off	On	Off
Reservation (On/Off)										
Confidential Wells	0	0	1	0	1	0	0	0	1	0
Active Wells	1	0	0	0	0	0	0	0	1	0
Permitted Wells	0	0	0	0	0	0	0	0	0	0

Table 13. Confidential, Active, and Permitted Wells within a 5-mile Radius of the Project Areas.

	Fast Dog #14-5H		Fettig #3-6		Patricia Charging 2 #2-15H		Pauline Grady #4-19H		TAT(1800) #2-4H	
	On	Off	On	Off	On	Off	On	Off	On	Off
Reservation (On/Off)										
Confidential Wells	6	0	6	0	6	0	2	2	8	0
Active Wells	5	0	3	0	4	0	1	4	6	0
Permitted Wells	0	0	0	0	0	0	0	0	0	0

Table 94. Confidential, Active, and Permitted wells within a 10-mile Radius of the Project Areas.

	Fast Dog #14-5H		Fettig #3-6		Patricia Charging 2 #2-15H		Pauline Grady #4-19H		TAT(1800) #2-4H	
	On	Off	On	Off	On	Off	On	Off	On	Off
Reservation (On/Off)	On	Off	On	Off	On	Off	On	Off	On	Off
Confidential Wells	22	9	21	16	30	0	12	17	26	0
Active Wells	10	8	8	27	16	0	7	46	13	0
Permitted Wells	0	0	0	0	0	0	0	0	0	0

Table 10. Confidential, Active, and Permitted Wells within a 20-mile Radius of the Project Areas.

	Fast Dog #14-5H		Fettig #3-6		Patricia Charging 2 #2-15H		Pauline Grady #4-19H		TAT(1800) #2-4H	
	On	Off	On	Off	On	Off	On	Off	On	Off
Reservation (On/Off)	On	Off	On	Off	On	Off	On	Off	On	Off
Confidential Wells	43	79	43	247	77	43	45	74	57	29
Active Wells	29	246	30	78	47	147	37	236	31	105
Permitted Wells	0	0	0	0	11	0	0	0	5	0

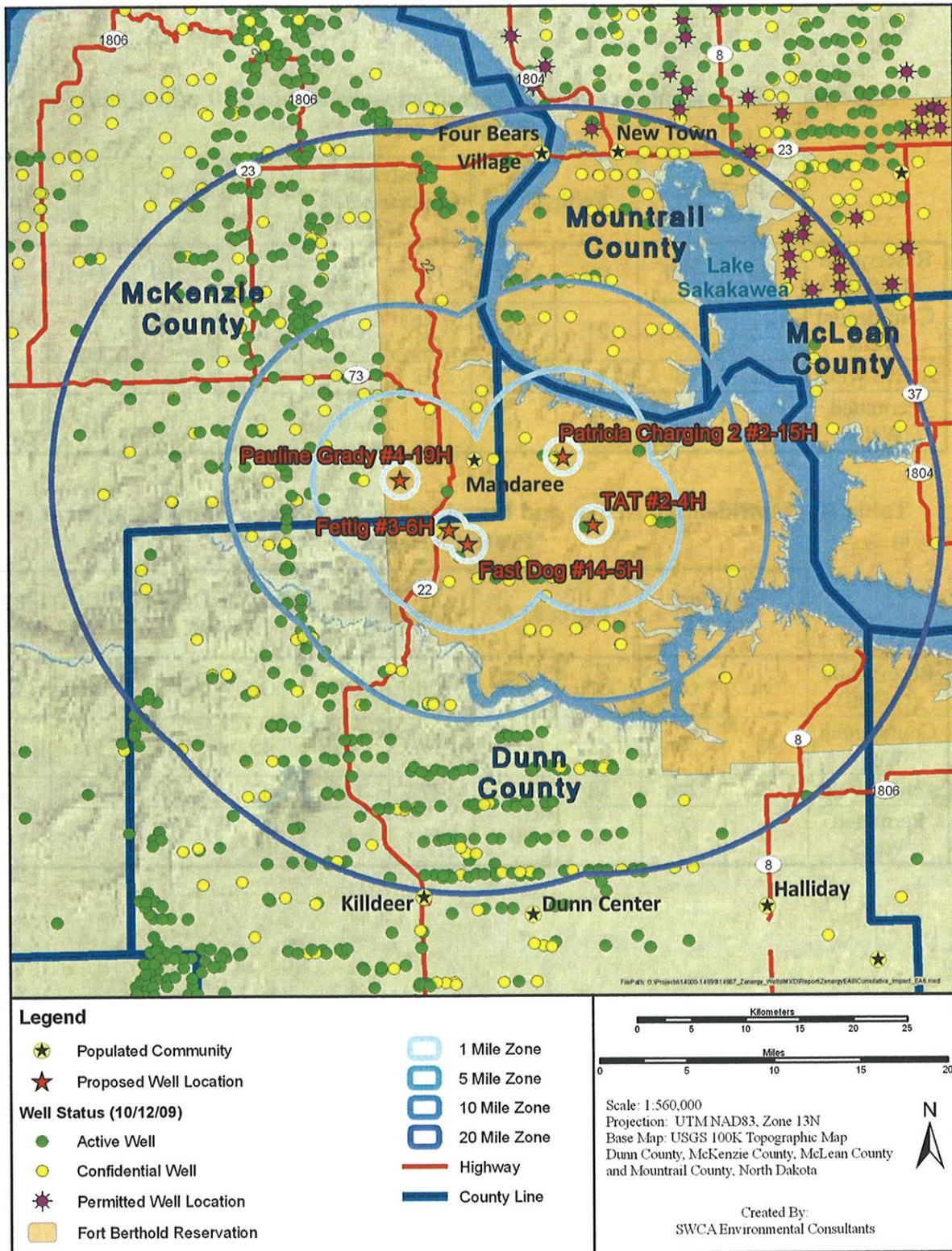


Figure 32. Active, confidential, and permitted wells within a 1-, 5-, 10-, and 20-mile radius of the proposed project locations.

Within the Reservation and near the proposed project areas, development projects remain few and widely dispersed. None of the project areas proposed in this EA would share access roads with any other proposed wells, but this may change in the future. If successful commercial production is achieved, new exploratory wells may be proposed, though such developments are merely speculation until APDs are submitted to the BLM and BIA for approval. Zenergy has suggested, but not yet formally proposed, that potentially 25 more wells may eventually be drilled in the same general area as the proposed projects, using many of the same main access roads and minimizing the disturbance as much as possible.

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 incrementally 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.

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 Upper and Lower Squaw Creek, Squaw Creek Bay, Upper Moccasin Creek, Skunk Creek, and Upper Bear Den 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 indefinitely at rates two to three times the background rate. The Proposed Action would create additional lengths of unpaved roadway in the project areas. Thus, the Proposed Action 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, and planting cover crops to stabilize soil following construction and before permanent seeding takes place.

Vegetation resources across the region 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 may be possible due to soil loss, compaction, and increased encroachment of unmanaged invasive weed species. 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 is 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 five 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 projects. Therefore, little change in employment would be expected over the long term.

Current impacts from oil and gas-related activities are still fairly dispersed, and the required BMPs would limit potential impacts. No significant negative impacts are 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.

4.0 CONSULTATION AND COORDINATION

The BIA must continue to make efforts to solicit the opinions and concerns of all stakeholders (Table 17). For the purpose of this EA, a stakeholder is considered any agency, municipality, or individual person which the Proposed Action may affect either directly or indirectly in the form of public health, environmental, or socioeconomic issues. A scoping letter declaring the locations of the proposed project areas and explaining the actions proposed at each site was sent in advance of this EA to allow stakeholders ample time to submit comments or requests for additional information. Additionally, a copy of this EA should be submitted to all federal agencies with interests either in, near, or potentially affected by the Proposed Action.



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

APR 03 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 Dunn County, North Dakota. Approximately 34.95 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the areas depicted in the enclosed reports. No historic properties were located that appear to possess the quality of integrity and meet at least one of the criteria (36 CFR 60.4) for inclusion on the National Register of Historic Places. 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-1602/FB/09**, the proposed undertakings, locations, and project dimensions are described in the following reports:

Ferris, Kade M.

(2009) A Cultural Resource Inventory of the Dakota 3-TAT #15-1H Well Pad and Access Road on the Fort Berthold Indian Reservation, Dunn County, North Dakota. SWCA Environmental Consultants for Zenergy, Inc., Tulsa, OK.

(2009) A Cultural Resource Inventory of the Dakota-3 TAT #2-4H Well Pad and Access Road on the Fort Berthold Indian Reservation, Dunn County, North Dakota. SWCA Environmental Consultants for Zenergy, Inc., Tulsa, OK.

(2009) A Cultural Resource Inventory of the Dakota-3 Benson #3-9H Well Pad and Access Road on the Fort Berthold Indian Reservation, Dunn County, North Dakota. SWCA Environmental Consultants for Zenergy, Inc., 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, Archeologist, at (605) 226-7656.

Sincerely,



Regional Director

Enclosures

cc: Chairman, Three Affiliated Tribes
Superintendent, Fort Berthold Agency



TRIBAL HISTORIC PRESERVATION

Mandan Hidatsa Arikara
Perry 'No Tears' Brady, Director.
404 Frontage Road,
New Town, North Dakota 58763
Ph/701-862-2474 fax/701-862-2490
pbrady@mhanation.com

April 7, 2009

Dr. Carson N. Murdy
Regional Archeologist
Bureau of Indian Affairs
Great Plains Regional Office
115 Fourth Ave. S.E.
Aberdeen, SD, 57401

RE: Project # AAO-1602/FB/09

Dakota 3-TAT #15-1H
Dakota 3-TAT #2-4H
Dakota 3-TAT #3-9H

Dr. Murdy:

After review of the documentation provided by your Office, 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 issues arise as the Project progresses.

Sincerely,


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

Environmental Assessment: Zenergy Operating Company, LLC, Dakota-3 Fast Dog #14-5H, Dakota-3 Fettig #3-6H, Dakota-3 Patricia Charging 2 #2-15H, Dakota-3 Pauline Grady #4-19H, Dakota-3 TAT (1800) #2-4H



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

OCT 30 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 five oil well pads and access roads in Dunn and McKenzie Counties, North Dakota. Approximately 173.61 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the areas depicted in the enclosed reports. Two archaeological sites (32DU1457 and 32DU1459) were located that may possess the quality of integrity and meet at least one of the criteria (36 CFR 60.4) for inclusion on the National Register of Historic Places. No properties were located that appear to qualify for protection under the American Indian Religious Freedom Act (42 USC 1996).

As the surface management agency, and as provided for in 36 CFR 800.5, we have therefore reached a determination of **no historic properties affected** for these undertakings. Site 32DU1457 will be avoided by moving the well pad to the west, and site 32DU1459 has been avoided by cancelling the proposed well pad and choosing a new well pad site. Catalogued as BIA Case Number AAO-1704/FB/10, the proposed undertakings, locations, and project dimensions are described in the following reports:

- Cooper, Judith, Norma Crumbley and Caryn M. Berg
(2009) A Class III Cultural Resources Inventory of the Zenergy Fettig 3-6H Well and Access Road, Fort Berthold Indian Reservation, Dunn and McKenzie Counties, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.
- Higgins, Courtney, and Stephanie Lechert
(2009) A Class I and Class III Cultural Resource Inventory of the Patricia Charging 2-15H Well Pad and Access Road on the Fort Berthold Indian Reservation, Dunn County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.
- (2009) A Class I and Class III Cultural Resource Inventory of the Stenehjem 14-8H Well Pad and Access Road on the Fort Berthold Indian Reservation, Dunn County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.
- Lechert, Stephanie
(2009) A Class I and Class III Cultural Resource Inventory of the Zenergy Pauline Grady 4-19H Well Pad and Access Road, Fort Berthold Indian Reservation, McKenzie County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.
- Lechert, Stephanie, and Judith Cooper
(2009) A Class I and Class III Cultural Resource Inventory of the Zenergy Fast Dog 4-5H and Fast Dog 14-15H Well Pads and Access Roads, Dunn County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.

Page 2

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,



Regional Director

Enclosures

cc: Chairman, Three Affiliated Tribes
Superintendent, Fort Berthold Agency

Table 116. Scoping Comments.

Name	Organization	Comment	Response to Comment
Bagley, Lonny	Bureau of Land Management	No Comment	
Benson, Barry	Three Affiliated Tribes	No Comment	
Bercier, Marilyn	Bureau of Indian Affairs	No Comment	
Berg, George	NoDak Electric Cooperative, Inc.	No Comment	
Black, Mike	Bureau of Indian Affairs	No Comment	
Boyd, Bill	Midcontinent Cable Company	No Comment	
Brady, Perry	THPO, Three Affiliated Tribes	No Comment	
Brien, David	Chairman, Turtle Mountain Band of Chippewa	No Comment	
Brugh, V. Judy	Three Affiliated Tribes	No Comment	
Cayko, Richard	McKenzie County	No Comment	
Christenson, Ray	Southwest Water Authority	No Comment	
Cimarosti, Dan	U.S. Army Corps of Engineers	Patsy Crooke: Check fact sheet and review need for permits or notifications.	Noted
U.S. Army Corps of Engineers, Omaha District	Garrison Project Office	No Comment	
Danks, Marvin	Fort Berthold Rural Water Director	No Comment	
Dhieux, Joyce	U.S. Environmental Protection Agency	No Comment	
Director, Insurance & Hazard	Federal Emergency Management Agency	No Comment	
Dixon, Doug	Montana Dakota Utilities	No Comment	
Erickson, Carroll	Ward County Board of Commissioners	No Comment	
Flores, J.R.	U.S. Department of Agriculture	Complete FPPA form if applicable.	
Fox, Fred	Three Affiliated Tribes	No Comment	
Glatt, David	North Dakota Department of Health	Impacts will be minor and can be controlled by proper construction methods.	Noted
Gorton, Candace	U.S. Army Corps of Engineers	No Comment	
Guzman, Frank	U.S. Forest Service	No Comment	

Environmental Assessment: Zenergy Operating Company, LLC, Dakota-3 Fast Dog #14-5H, Dakota-3 Fettig #3-6H, Dakota-3 Patricia Charging
 2 #2-15H, Dakota-3 Pauline Grady #4-19H, Dakota-3 TAT (1800) #2-4H

Name	Organization	Comment	Response to Comment
Hall, Todd	Three Affiliated Tribes	No Comment	
Hanson, Jesse	North Dakota Parks and Recreation	Several occurrences of significant ecological communities/plant species of concern were noted in the area where the proposed Fettig #3-6H well would be located. Department recommends that the project be completed with minimal impacts and all efforts be made to ensure that critical habitats not be disturbed. During reclamation, revegetated with native species.	See Reclamation section of EA. Plants/communities in question are within 1 mile of the project area, but no disturbance is planned in these areas.
Hauck, Reinhard	Dunn County	No Comment	
His Horse Is Thunder, Ron	Chairman, Standing Rock Sioux Tribe	No Comment	
Hoffman, Warren	Killdeer, Weydahl Field	No Comment	
Hovda, Roger	Reservation Telephone Cooperative	No Comment	
Hudson-Schenfisch, Julie	McLean County Board of Commissioners	No Comment	
Hynek, David	Chair, Mountrail Board of County Commissioners	No Comment	
Johnson, Harley	New Town Municipal Airport	No Comment	
Kadrnas, Ray	Dunn County	No Comment	
Kuehn, John	Parshall-Hankins Field Airport	No Comment	
Kulas, Cheryl	Indian Affairs Commission	No Comment	
Land Department	Northern Border Pipeline Company	No Comment	
Laux, Eric	U.S. Army Corps of Engineers	Brad Thompson: Coordinate with the EPA, USFWS, NDGF, SHPO. Consult the floodplain management office.	Necessary consultations have been, or will be, made.
Lindemann, Larry	Airport Manager, Barnes County Municipal Airport	No Comment	
Manager	Xcel Energy	No Comment	
McKenna, Mike	North Dakota Game and Fish Department	Avoid construction to the extent possible within native prairie, wooded draws, riparian corridors, wetland areas.	See Wetland, Wildlife, and Vegetation sections.

Environmental Assessment: Zenergy Operating Company, LLC, Dakota-3 Fast Dog #14-5H, Dakota-3 Fettig #3-6H, Dakota-3 Patricia Charging 2 #2-15H, Dakota-3 Pauline Grady #4-19H, Dakota-3 TAT (1800) #2-4H

Name	Organization	Comment	Response to Comment
Mercer County	Mercer County Board of Commissioners	No Comment	
Missile Engineer, Chief	Minot Air Force Base	No Comment	
NAGPRA Office	Three Affiliated Tribes	No Comment	
Nash, Mike	Bureau of Land Management	No Comment	
Natural Resources Department	Three Affiliated Tribes	No Comment	
Nelson, Richard	U.S. Bureau of Reclamation	Ronald Melhouse: Fettig #3-6 is in the vicinity of a water pipeline. Consult with Marvin Danks, Fort Berthold Rural Water Director.	Operator notified
Obenauer, Steve	Federal Aviation Administration	No Comment	
Olson, Frances	McKenzie County	No Comment	
Paaverud, Merl	State Historical Society	Send copy of reports and forms to keep archives current. Consider putting TCP-related info in separate reports not sent to SHPO.	Noted.
Packineau, Mervin	Three Affiliated Tribes	No Comment	
Paulson, Gerald	Western Area Power Administration	No Comment	
Pearson, Myra	Spirit Lake Sioux Tribe	No Comment	
Peterson, Walter	North Dakota Department of Transportation	No Comment	
Poitra, Fred	Three Affiliated Tribes	No Comment	
Prehal, Doug	North Dakota Parks and Recreation Department	No Comment	
Representative, Mandaree Segment	Three Affiliated Tribes	No Comment	
Rudolph, Reginald	McLean Electric Cooperative, Inc.	No Comment	
Schelkoph, David	West Plains Electric Cooperative, Inc.	No Comment	
Selvage, Michael	Chairman, Sisseton-Wahpeton Sioux Tribe	No Comment	
Shortbull, Marietta	Fort Berthold Agency	No Comment	

Environmental Assessment: Zenergy Operating Company, LLC, Dakota-3 Fast Dog #14-5H, Dakota-3 Fettig #3-6H, Dakota-3 Patricia Charging 2 #2-15H, Dakota-3 Pauline Grady #4-19H, Dakota-3 TAT (1800) #2-4H

Name	Organization	Comment	Response to Comment
Svoboda, Larry	U.S. Environmental Protection Agency	No Comment	
Thorson, Gary	McKenzie Electric Cooperative	No Comment	
Towner, Jeffrey	U.S. Fish and Wildlife Service	No Comment	
Chevance, Nick	National Park Service, Midwest Region	No Comment	
Vodehnal, Dale	U.S. Environmental Protection Agency	No Comment	Returned -- wrong address
Wells, Marcus	Chairman, Three Affiliated Tribes	No Comment	
Whitcalf, Frank	Three Affiliated Tribes	No Comment	
Williams, Damon	Three Affiliated Tribes	No Comment	
Wolf, Malcolm	Three Affiliated Tribes	No Comment	

List of Preparers

An interdisciplinary team contributed to this document, following guidance in Part 1502.6 of CEQ regulations. This document was drafted by SWCA Environmental Consultants under the direction of the BIA. Information was compiled from various sources within SWCA Environmental Consultants.

Zenergy Operating Company, LLC

- Kelley Bryan, Williston Basin Land Manager

SWCA Environmental Consultants

- Joey Sheeley, Planning Specialist
Prepared the EA.
- Michael J. Cook, Ecologist
Reviewed field survey information.
- Joshua Ruffo, Wildlife Biologist
Conducted natural resource surveys for well pads and access roads.
- Jon Markman, Archaeologist/Field Coordinator
Conducted cultural resource surveys for well pads and access roads.
- Stephanie Lechert, Archaeologist
Conducted cultural resource surveys for well pads and access roads.
- Wade Epperson, GIS Specialist
Created maps and spatially derived data.
- Brent Sobotka, Hydrologist/CPESC
Completed water resources section.
- Richard Wadleigh, NEPA Coordinator
Reviewed document for content and adequacy.

5.0 REFERENCES

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Lechert, Stephanie, and Judith Cooper. 2009. A Class I and Class III Cultural Resource Inventory of the Zenergy Fast Dog 4-5H and Fast Dog 14-15H Well Pads and Access Roads, Dunn County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.

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6.0 ACRONYMS

°F	degrees Fahrenheit
APD	Application for Permit to Drill
APE	Area of Potential Effect
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	Environmental Protection Agency
ESA	Endangered Species Act
GHG	greenhouse gas
HUC	hydrologic unit code
IPCC	Intergovernmental Panel on Climate Change
MHA Nation	Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
NAGPRA	Native American Graves Protection and Repatriation Act
NDDH	North Dakota Department of Health
NDIC	North Dakota Industrial Commission
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PEM	palustrine emergent
ppm	parts per million
ROW	right-of-way
SHPO	State Historic Preservation Officer
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Officer
TVD	total vertical depth
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service



REPLY TO
ATTENTION OF

North Dakota Regulatory Office

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

October 16, 2009

[NWO-2009-2570-BIS]

SWCA Environmental Consultants
ATTN: Mr. Joey Sheeley
115 North 4th Street, Suite 1
Bismarck, North Dakota 58501

Dear Mr. Sheeley:

This is in response to your request for comments on behalf of the Bureau of Indian Affairs who will be preparing an Environmental Assessment for proposed construction of five separate exploratory oil and gas wells on the Fort Berthold Reservation by Zenergy Operating Company, LLC. These wells are located in Dunn and McKenzie Counties, North Dakota and are identified as follows:

- Dakota-3 Fast Dog #14-5H
- Dakota-3 Fettig #3-6h
- Dakota-3 Patricia Charging (1979) #2-15H
- Dakota-3 Stenehjem #14-8H
- Dakota-3 Pauline Grady #4-19H

The Corps of Engineers regulates the discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act. If the work, including the associated facilities, would include a discharge of dredged or fill material in waters of the U.S., even temporarily, a permit would be required. Nationwide Permit No.12 may cover the work proposed provided all the terms and conditions of the nationwide permit, including water quality certification, are met. In certain instances, the current nationwide permit does not require notification to the Corps. Please review the attached Fact Sheet to see if these projects require notification.

If you believe this project will result in a discharge of fill material in waters of the U.S. please fill out the enclosed application and return to our office.

If you have any questions regarding this letter or our program, please do not hesitate to write me at the above address, or call this office at (701) 255-0015.

Sincerely,

Patsy Crooke
Project Manager
North Dakota Regulatory Office

Enclosures



REPLY TO
ATTENTION OF

North Dakota Regulatory Office

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

October 13, 2009

[NWO-2009-2545-BIS
NWO-2009-2546-BIS
NWO-2009-2552-BIS]

SWCA Environmental Consultants
ATTN: Ms. Sarah Ruffo
115 North 4th Street, Suite 1
Bismarck, North Dakota 58501

Dear Ms. Ruffo:

This is in response to your request for comments on behalf of the Bureau of Indian Affairs who will be preparing an Environmental Assessment for proposed construction of fifteen (15) separate exploratory oil and gas wells on the Fort Berthold Reservation by Zenergy Operating Company, LLC. These wells are located in Dunn and McKenzie Counties, North Dakota.

The Corps of Engineers regulates the discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act. If the work, including the associated facilities, would include a discharge of dredged or fill material in waters of the U.S., even temporarily, a permit would be required. Nationwide Permit No.12 may cover the work proposed provided all the terms and conditions of the nationwide permit, including water quality certification, are met. In certain instances, the current nationwide permit does not require notification to the Corps. Please review the attached Fact Sheet to see if these projects require notification.

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Sincerely,

Patsy Crooke
Project Manager
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FACT SHEET
NATIONWIDE PERMIT 12
(2007)

UTILITY LINE ACTIVITIES. Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2 acre of waters of the United States.

Utility lines: This NWP authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in pre-construction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2 acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for overhead utility line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, provided the total discharge from a single and complete project does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (See 33 CFR Part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or

under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP also authorizes temporary structures, fills, and work necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (Sections 10 and 404)

Note 1: Where the proposed utility line is constructed or installed in navigable waters of the United States (i.e., section 10 waters), copies of the pre-construction notification and NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, accordance with the requirements for temporary fills.

Note 3: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to Section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

General Conditions: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as appropriate, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. **Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

3. **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. **Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. **Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48.

6. **Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. **Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. **Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. **Management of Water Flows.** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. **Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. **Equipment.** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. **Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

15. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

16. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

17. Endangered Species. (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical

habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide Web pages at <http://www.fws.gov/> and <http://www.noaa.gov/fisheries.html> respectively.

18. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

19. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 27, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

20. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require pre-construction notification, unless the district engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. For wetland losses of 1/10 acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream restoration, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2 acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2 acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address

documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

21. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality. *Specifically in North Dakota, the North Dakota Department of Health has denied certification for projects under this Nationwide Permit proposed to cross **all classified rivers, tributaries and lakes**; individual certification for project in these waterways must be obtained by the project proponent prior to authorization under this Nationwide Permit. For utility line crossings of all other waters, the Department of Health has issued water quality certification provided the attached Construction and Environmental Disturbance Requirements are followed.*

22. Coastal Zone Management. *Not Applicable.*

23. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

24. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

25. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:
"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)

(Date)

26. Compliance Certification. Each permittee who received a NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:

- (a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;
- (b) A statement that any required mitigation was completed in accordance with the permit conditions; and
- (c) The signature of the permittee certifying the completion of the work and mitigation.

27. Pre-Construction Notification. *See attached pages.*

28. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

General Condition 27. Pre-Construction Notification.

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) Forty five calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 17 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.);

(4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters of the United States, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, where appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10 acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWP's and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP 48 activities requiring pre-construction notification and for other NWP activities requiring pre-construction notification to the district engineer that result in the loss of greater than 1/2-acre of waters of the United States, the district engineer will immediately provide (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy of the PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps multiple copies of pre-construction notifications to expedite agency coordination.

(5) For NWP 48 activities that require reporting, the district engineer will provide a copy of each report within 10 calendar days of receipt to the appropriate regional office of the NMFS.

(e) District Engineer's Decision: In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If the proposed activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.

**2007 NATIONWIDE PERMITS
REGIONAL CONDITIONS
STATE OF NORTH DAKOTA
OMAHA DISTRICT – CORPS OF ENGINEERS**

The U.S. Army Corps of Engineers has adopted the following regional conditions for activities authorized by nationwide permits within the State of North Dakota. However, the pre-construction notification requirements defined below are not applicable to Nationwide Permit 47.

1. Wetlands Classified as Fens

All Nationwide Permits, with the exception of 3, 5, 20, 32, 38, 45, and 47, are revoked for use in fens in North Dakota. For nationwide permits 3, 5, 20, 32, 38, and 45 permittees must notify the Corps in accordance with General Condition 27 (Notification) prior to initiating any regulated activity impacting fens in North Dakota.

Fens are wetlands that develop where a relatively constant supply of ground water to the plant rooting zone maintains saturated conditions most of the time. The water chemistry of fens reflects the mineralogy of the surrounding and underlying soils and geological materials. The substrate is carbon-accumulating, ranging from muck to peat to carbonates. These wetlands may be acidic to alkaline, have pH ranging from 3.5 to 8.4 and support a range of vegetation types. Fens may occur on slopes, in depressions, or on flats (i.e., in different hydrogeomorphic classes; after: Brinson 1993).

2. Waters Adjacent to Natural Springs

For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 27 (Notification) for regulated activities located within 100 feet of the water source in natural spring areas in North Dakota. For purposes of this condition, a spring source is defined as any location where there is artesian flow emanating from a distinct point at any time during the growing season. Springs do not include seeps and other groundwater discharge areas where there is no distinct point source.

3. Missouri River, including Lake Sakakawea and Lake Oahe within the State of North Dakota

For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 27 (Notification) prior to initiating any regulated activity in the Missouri River, including Lake Sakakawea and Lake Oahe, within the State of North Dakota.

4. Historic Properties

That the permittee and/or the permittee's contractor, or any of the employees, subcontractors or other persons working in the performance of a contract(s) to complete the work authorized herein, shall cease work and report the discovery of any previously unknown historic or archeological remains to the North Dakota Regulatory Office. Notification shall be by telephone or fax within 24 hours of the discovery and in writing within 48 hours. Work shall not resume until the permittee is notified by the North Dakota Regulatory Office.

5. Spawning Condition

That no regulated activity within waters of the United States listed as Class III or higher on the 1978 Stream Evaluation Map for the State of North Dakota or on the North Dakota Game and Fish Department's website as a North Dakota Public Fishing Water shall occur between 15 April and 1 June. No regulated activity within the Red River of the North shall occur between 15 April and 1 July.

Additional Information

Permittees are reminded that General Condition No. 6 prohibits the use of unsuitable material. In addition, organic debris, some building waste, and materials excessive in fines are not suitable material.

Specific verbiage on prohibited materials and the 1978 Stream Evaluation Map for the State of North Dakota can be accessed on the North Dakota Regulatory Office's website at:

<https://www.nwo.usace.army.mil/html/od-rnd/ndhome.htm>



Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

**Instructions for Preparing a
Department of the Army Permit Application**

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name and the E-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, e.g., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the latitude and longitude of where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality that the site is located in.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wing walls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Description of Avoidance, Minimization, and Compensation. Provide a brief explanation describing how impacts to waters of the United States are being avoided and minimized on the project site. Also provide a brief description of how impacts to waters of the United States will be compensated for, or a brief statement explaining why compensatory mitigation should not be required for those impacts.

Block 24. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identify the authorization, if possible.

Block 25. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 26. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 27. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.

**APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
(33 CFR 325)**

**OMB APPROVAL NO. 0710-0003
EXPIRES: 31 August 2012**

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please **DO NOT RETURN** your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers, Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - E-mail Address -		6. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required) First - Middle - Last - Company - E-mail Address -	
6. APPLICANT'S ADDRESS Address - City - State - Zip - Country -		6. AGENT'S ADDRESS Address - City - State - Zip - Country -	
7. APPLICANT'S PHONE NOs. WAREA CODE a. Residence b. Business c. Fax		10. AGENT'S PHONE NOs. WAREA CODE a. Residence b. Business c. Fax	

STATEMENT OF AUTHORIZATION

I, I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE

DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)	
13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable) Address City - State - Zip -
15. LOCATION OF PROJECT Latitude: °N Longitude: °W	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID Municipality Section - Township - Range -	
17. DIRECTIONS TO THE SITE	

18. Nature of Activity (Description of project, include all features)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
-------------------------------	-------------------------------	-------------------------------

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres
Or
Liner Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplement(s))

Address -
City - State - Zip -

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
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* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: "Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any truth, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both."



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

John Hoeven
Governor of North Dakota

October 16, 2009

North Dakota
State Historical Board

SWCA Environmental Consultants
Joey Sheeley, Planning Specialist
1043 Coffeen Avenue, Suite D
Sheridan, WY 82801

Chester E. Nelson, Jr.
Bismarck - President

Gereld Gerntholz
Valley City - Vice President

Richard Kloubec
Fargo - Secretary

Albert I. Berger
Grand Forks

Calvin Grinnell
New Town

Diane K. Larson
Bismarck

NDSHPO REF. 10-0072 BIA/MHAN/BLM Environmental Assessment for 5 well pads and access roads Fort Berthold Reservation Zenergy Operating Company, Dakota-3
Fast Dog in portions of [SE1/4 SW ¼ T148N R94W Section 5] Dunn Cty
Fettig 3-6H in portions of [NE NW T148N R94W Section 6] Dunn County
Patricia Charging (1979) 2-15H in portions of [NW NE T149N R93W Section 15] Dunn County
Stenehjem 14-8H in portions of [SE SW T149N R94W Section 8] McKenzie County
Pauline Grady 4-19H in portions of [NW NW T149N R94W Section 19] McKenzie County, all in North Dakota

A. Ruric Todd III
Jamestown

Dear Mr. Sheeley,

Sara Otte Coleman
*Director
Tourism Division*

We received your letter regarding NDSHPO REF. 10-0072 BIA/MHAN/BLM Environmental Assessment for 5 well pads and access roads Fort Berthold Reservation Zenergy Operating Company, Dakota-3. We request that a copy of cultural resource site forms and reports be sent to this office so that the cultural resources archives can be kept current. Perhaps one might consider putting TCP (Traditional Cultural Properties) related information in separate reports not sent to this office.

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Douglass Prchal
*Director
Parks and Recreation
Department*

Thank you for your consideration.
Consultation is with MIHAN THPO.

Francis Ziegler
*Director
Department of Transportation*

If you have any questions please contact Susan Quinnell, Review & Compliance Coordinator at (701)328-3576 or squinnell@nd.gov

Merlan E. Paaverud, Jr.
Director

Sincerely,

Merlan E. Paaverud, Jr.

Accredited by the
American Association
of Museums

State Historic Preservation Officer (North Dakota)
and Director, State Historical Society of North Dakota

United States Department of Agriculture



Natural Resources Conservation Service
P.O. Box 1458
Bismarck, ND 58502-1458

October 27, 2009

SWCA Environmental Consultants
Joey Sheeley, Planning Specialist
1043 Coffeen Avenue, Suite D
Sheridan, WY 82801

RE: Construction, completion and production of five exploratory oil and gas wells on the Fort Berthold Reservation by Zenergy Operating Company, LLC (Zenergy).

Dakota-3 Fast Dog #14-5H: SE1/4SW1/4, Section 5, T148N, R94W, Dunn County, ND

Dakota-3 Fettig #3-6H: NE1/4NW1/4, Section 6, T148N, R94W, Dunn County, ND

Dakota-3 Patricia Charging (1979) #2-15H: NW1/4NE1/4, Section 15, T149N, R93W,
Dunn County, ND

Dakota-3 Stenehjem #14-8H SE1/4SW1/4, Section 8, T149N, R94W, McKenzie County, ND

Dakota-3 Pauline Grady #4-19H: NW1/4NW1/4, Section 19, T149N, R94W, McKenzie
County, ND

Mr. Sheeley:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated October 13, 2009, regarding construction, completion and production of five exploratory oil and gas wells on the Fort Berthold Reservation by Zenergy Operating Company, LLC (Zenergy).

Important Farmlands - NRCS has a major responsibility with Farmland Protection Policy Act (FPPA) in documenting conversion of farmland (i.e., prime, statewide, and local importance) to non-agriculture use when federal funding is used. If your project consists of farmland being removed from production FPPA will apply.

For those areas subject to FPPA, the following form must be completed. Enclosed is a Farmland Conversion Impact Rating Form AD-1006 or you may utilize a fillable, web based form at http://www.nrcs.usda.gov/Programs/fppa/pdf_files/AD1006.PDF to record the following. You will need to complete Part I and Part III. We will also need a map, at an appropriate scale, so we can accurately assess the area (e.g., 1:20,000 or 1:24,000). If the farmland (i.e., prime, statewide, and local importance) is determined to be subject to the FPPA, we will then complete Parts II and IV. NRCS will measure the relative value of the site as farmland on a scale of 0 to 100, according to the information sources listed in CFR, Sec. 658.5(a). If FPPA applies to this site, Form AD-1006 will be returned to SWCA Environmental Consultants for completion of Part VI, Site Assessment Criteria.

Helping People Help the Land

An Equal Opportunity Provider and Employer



Mr. Sheeley
Page 2

Wetlands – The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose of, or to have the effect of, making agricultural production possible, loss of USDA benefits could occur. The Natural Resource Conservation Service has developed the following guidelines to help avoid impacts to wetlands and possible loss of USDA benefits for producers. If these guidelines are followed, the impacts to the wetland will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements: 1) Disturbance to the wetland(s) must be temporary, 2) no drainage of the wetland(s) is allowed (temporary or permanent), 3) mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained, 4) temporary side cast material must be placed in such a manner not to be dispersed in the wetland, and 5) all trenches must be backfilled to the original wetland bottom elevation.

NRCS would recommend that impacts to wetlands be avoided. If the alignment of the project requires passage through a wetland, NRCS can complete a certified wetland determination if requested by the land owner/operator.

If you have additional questions pertaining to FPPA, please contact Steve Sieler, Liaison Soil Scientist, NRCS, Bismarck, ND at (701) 530-2019.

Sincerely,



ACTING JOHN GLOVER
Acting State Conservationist

cc:
Kyle Hartel, DC, NRCS, Watford City, ND
Susan Tuhy, DC, NRCS, Killdeer, ND
Terry Gisvold, ASTC (FO), NRCS, Dickinson, ND

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request			
Name Of Project		Federal Agency Involved			
Proposed Land Use		County And State			
PART II (To be completed by SCS)		Date Request Received By SCS			
Does the site contain prime, unique, statewide or local important farmland? <i>(If no, the FPPA does not apply – do not complete additional parts of this form).</i>		Yes <input type="checkbox"/>	No <input type="checkbox"/>	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount Of Farmland As Defined in FPPA Acres: %			
Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By SCS			
PART III (To be completed by Federal Agency)		Alternative Site Rating			
		Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly					
B. Total Acres To Be Converted Indirectly					
C. Total Acres In Site					
PART IV (To be completed by SCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value					
PART V (To be completed by SCS) Land Evaluation Criterion Relative Value Of Farmland To Be Converted <i>(Scale of 0 to 100 Points)</i>					
PART VI (To be completed by Federal Agency)		Maximum Points			
Site Assessment Criteria <i>(These criteria are explained in 7 CFR 658.5(b))</i>					
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS		160			
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland <i>(From Part V)</i>		100			
Total Site Assessment <i>(From Part VI above or a local site assessment)</i>		160			
TOTAL POINTS (Total of above 2 lines)		260			
Site Selected:		Date Of Selection	Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Reason For Selection:					



John Hoeven, Governor
Douglass A. Prchal, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

October 23, 2009

Joey Sheeley
SWCA Environmental Consultants
1043 Coffeen Avenue, Suite D
Sheridan, WY 82801

Re: Zenergy Operating Company LLC Drilling of Five Exploratory Oil and Gas Wells
Fort Berthold Reservation

Dear Mr. Sheeley:

The North Dakota Parks and Recreation Department (the Department) has reviewed the above referenced project proposal for Zenergy Operating Company LLC to drill five exploratory oil and gas wells in Sections 5 and 6, T148N, R94W and Section 15, T149N, R93W, Dunn County; and Sections 8 and 19, T149N, R94W, McKenzie County.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare plants and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Parks and Recreation Department is responsible for coordinating North Dakota's Scenic Byway and Backway Program. This proposed project is in proximity to a Scenic Byway and as such we recommend any project development be completed with the least amount of or no visual impact to the immediate and distant views from that Byway. North Dakota Parks and Recreation Department staff should be contacted at 701-328-5355 to assist in mitigation of any potential impacts.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any current or historic plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, several occurrences have been identified within or adjacent to the project area including: *Schizachyrium scoparium* – *Bouteloua spp. (curtipendula, gracilis)* prairie (Western little bluestem prairie) and *Andropogon gerardii* – *Schizachyrium scoparium transition tallgrass prairie* (Central mesic tallgrass prairie). Please see the attached spreadsheet and map for more specific information on these species.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

The Department recommends that the project be accomplished with minimal impacts and that all efforts be made to ensure that critical habitats not be disturbed in the project area to help secure rare species conservation in North Dakota. Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

It is our policy to charge out-of-state requests for data services including data retrieval, data analysis, manual and computer searches, packaging and collection of data. An invoice for services provided has been enclosed.

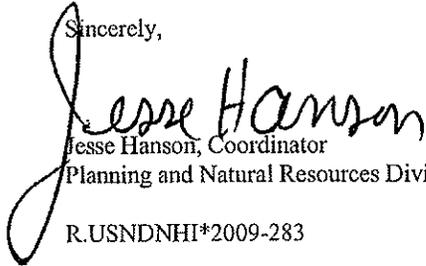
.....
Play in our backyard!

October 23, 2009

Page 2

Thank you for the opportunity to comment on this project. Please contact Kathy Duttonhefner (701-328-5370 or kduttonhefner@nd.gov) of our staff if additional information is needed.

Sincerely,

A handwritten signature in black ink that reads "Jesse Hanson". The signature is written in a cursive style with a large, looping initial "J".

Jesse Hanson, Coordinator
Planning and Natural Resources Division

R.USNDNHI*2009-283

ND Parks and Recreation Department

ND Natural Heritage Inventory
 1600 East Century Ave., Suite 3
 Bismarck, ND 58503-0649
 (701) 328-5370 FAX: (701) 328-5363

INVOICE NO: 0100
 DATE: 10/23/2009

To: Joey Sheeley
 SWCA Environmental Consultants
 1043 Coffeen Avenue, Suite D
 Sheridan, WY 82801

CONTACT	REFERENCE NO.	DATE SHIPPED	SHIPPED VIA	F.O.B. POINT	TERMS
K.Duttenhefner	R.USNDNHI*2009 -283	10/28/2009			

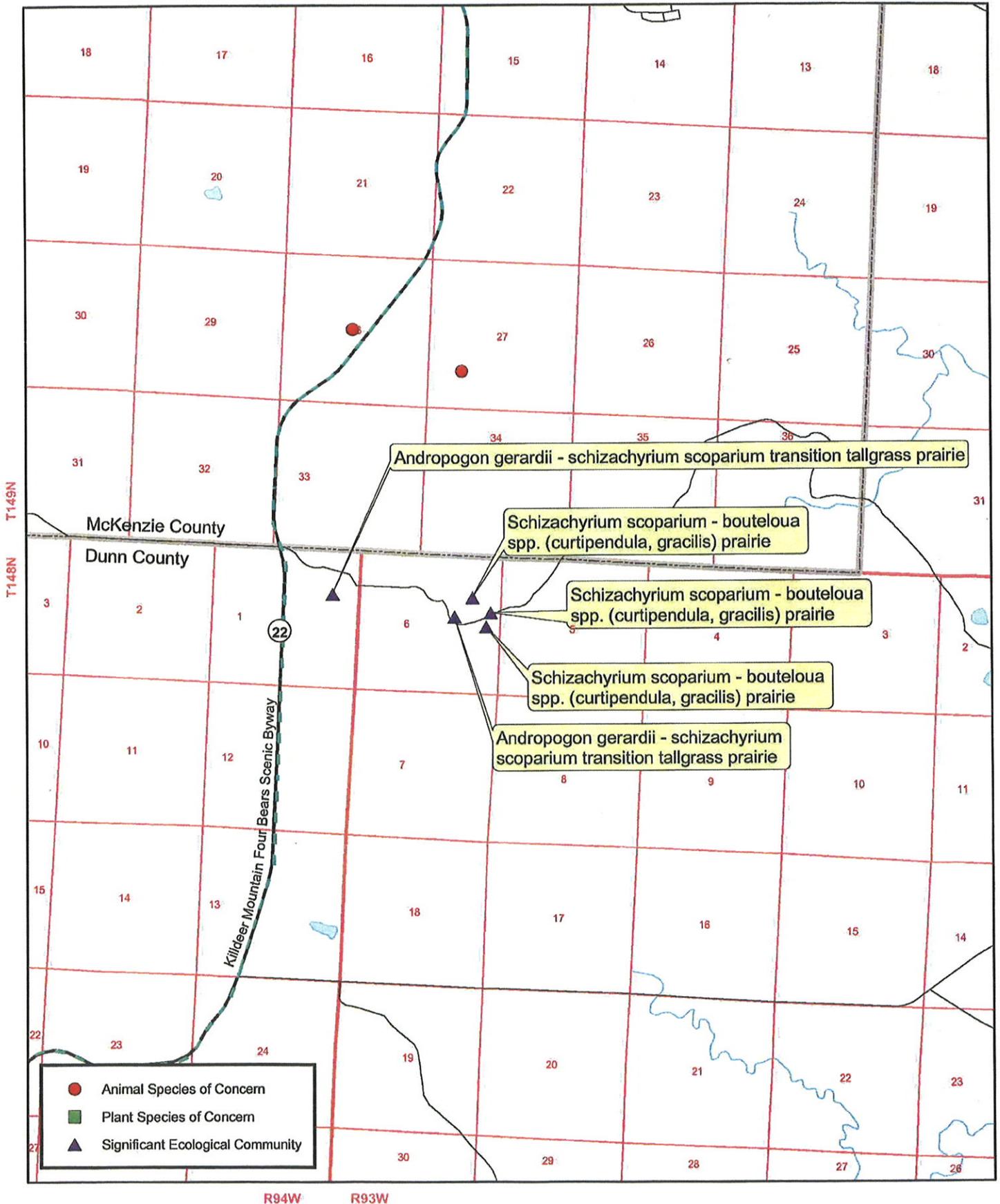
QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
1	Computer data search, data retrieval, spreadsheet and map creation.	\$ 60.00	\$ 60.00
SUBTOTAL			\$ 60.00
SALES TAX			
SHIPPING & HANDLING			
TOTAL DUE			\$ 60.00

Make all checks payable to: ND Parks and Recreation Department
 If you have any questions concerning this invoice, call: Kathy Duttenhefner, (701) 328-5370

THANK YOU FOR YOUR INTEREST IN RARE SPECIES CONSERVATION.

Entry Event	Fund	Dept.	Project	Activity
463021	398	1508	OR15082	15082

North Dakota Natural Heritage Inventory Species of Concern and Significant Ecological Communities



- Animal Species of Concern
- Plant Species of Concern
- ▲ Significant Ecological Community

R94W R93W

North Dakota Natural Heritage Inventory
Rare Animal and Plant Species and Significant Ecological Communities

State Scientific Name	State Common Name	State Rank	Global Rank	Federal Status	Township Range Section	County	Last Observation	Estimated Representation Accuracy	Precision
<i>Schizachyrium scoparium</i> - <i>bouteloua</i> spp. (<i>curtipendula</i> , <i>gracilis</i>) prairie	Western Little Bluestem Prairie	S2	GNR		148N094W - 06; 148N094W - 07; 148N094W - 04; 149N094W - 34; 148N094W - 09; 148N094W - 08; 149N094W - 33; 149N094W - 35; 148N094W - 05; 148N095W - 01; 148N095W - 12	Dunn, McKenzie	1967		M
<i>Schizachyrium scoparium</i> - <i>bouteloua</i> spp. (<i>curtipendula</i> , <i>gracilis</i>) prairie	Western Little Bluestem Prairie	S2	GNR		148N094W - 06; 148N094W - 07; 148N094W - 04; 149N094W - 34; 148N094W - 09; 148N094W - 08; 149N094W - 33; 149N094W - 35; 148N094W - 05; 148N095W - 01; 148N095W - 12	Dunn, McKenzie	1967		M
<i>Schizachyrium scoparium</i> - <i>bouteloua</i> spp. (<i>curtipendula</i> , <i>gracilis</i>) prairie	Western Little Bluestem Prairie	S2	GNR		148N094W - 06; 148N094W - 07; 148N094W - 04; 149N094W - 34; 149N094W - 33; 148N094W - 08; 149N094W - 35; 148N094W - 05; 148N095W - 01; 148N095W - 12	Dunn, McKenzie	1967		M
<i>Andropogon gerardii</i> - <i>schizachyrium scoparium</i> transition tallgrass prairie	Central Mesic Tallgrass Prairie	S1	GNR		148N094W - 06; 149N094W - 33; 148N095W - 12; 148N095W - 01; 149N094W - 34; 148N094W - 08; 149N094W - 35; 148N094W - 05; 148N094W - 07	Dunn, McKenzie	1967		M
<i>Andropogon gerardii</i> - <i>schizachyrium scoparium</i> transition tallgrass prairie	Central Mesic Tallgrass Prairie	S1	GNR		148N095W - 01; 149N094W - 33; 148N095W - 12; 148N094W - 05; 149N094W - 32; 148N095W - 11; 149N094W - 34; 148N095W - 02; 148N094W - 07; 148N094W - 06	Dunn, McKenzie	1967		M

North Dakota Natural Heritage Inventory Biological and Conservation Data Disclaimer

The quantity and quality of data collected by the North Dakota Natural Heritage Inventory are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in North Dakota have never been thoroughly surveyed, and new species are still being discovered. For these reasons, the Natural Heritage Inventory cannot provide a definite statement on the presence, absence, or condition of biological elements in any part of North Dakota. Natural Heritage data summarize the existing information known at the time of the request. Our data are continually upgraded and information is continually being added to the database. This data should never be regarded as final statements on the elements or areas that are being considered, nor should they be substituted for on-site surveys.

Estimated Representation Accuracy

Value that indicates the approximate percentage of the Element Occurrence Representation (EO Rep) that was observed to be occupied by the species or community (versus buffer area added for locational uncertainty). Use of estimated representation accuracy provides a common index for the consistent comparison of EO reps, thus helping to ensure that aggregated data are correctly analyzed and interpreted.

Very high (>95%)

High (>80%, <= 95%)

Medium (>20%, <= 80%)

Low (>0%, <= 20%)

Unknown

(null) - Not assessed

Precision

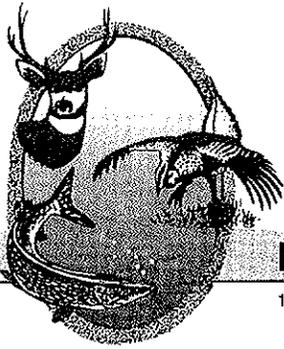
A single-letter code for the precision used to map the Element Occurrence (EO) on a U.S. Geological Survey (USGS) 7.5' (or 15') topographic quadrangle map, based on the previous Heritage methodology in which EOs were located on paper maps using dots.

S - Seconds: accuracy of locality mappable within a three-second radius; 100 meters from the centerpoint

M - Minute: accuracy of locality mappable within a one-minute radius; 2 km from the centerpoint

G - General: accuracy of locality mappable to map or place name precision only; 8 km from centerpoint

U - Unmappable



"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

October 28, 2009

Joey Sheeley
Planning Specialist
SWCA Environmental Consultants
1043 Coffeen Avenue, Suite D
Sheridan, WY 82801

Dear Ms. Sheeley:

RE: Exploratory Oil & Gas Wells
Forth Berthold Reservation

Zenergy Operating Company, LLC has proposed five exploratory oil and gas wells on the Fort Berthold Reservation in sections 5 & 6, T148N, R94W and section 15, T149N, R93W of Dunn County; and sections 8 & 19, T149N, R94W of McKenzie County, North Dakota. The wells would be positioned to utilize existing roadways for access to the greatest extent possible.

Our primary concern with oil and gas development is the fragmentation and loss of wildlife habitat associated with construction of the well pads and access roads. We recommend that construction be avoided to the extent possible within native prairie, wooded draws, riparian corridors, and wetland areas.

We also suggest that botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests before construction begins.

Sincerely,

(for) Michael G. McKenna
Chief
Conservation & Communication Division

js



NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov



October 15, 2009

Joey Sheeley, Planning Specialist
SWCA Environmental Consultants
1043 Coffeen Avenue, Suite D
Sheridan, WY 82801

Re: Five Proposed Exploratory Oil & Gas Wells by Zenergy Operating Company, LLC on the Fort Berthold Reservation, Dakota-3 Fast Dog #14-5H, Dakota-3 Fettig #3-6H & Dakota-3 Patricia Charging #2-15H in Dunn County & Dakota-3 Stenehjem #14-8H & Dakota-3 Pauline Grady #4-19H in McKenzie County, North Dakota

Dear Mr. Sheeley:

This department has reviewed the information concerning the above-referenced project with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. Development of the production facilities and any access roads or well pads should have a minimal effect on air quality provided measures are taken to minimize fugitive dust. However, operation of the wells has the potential to release air contaminants capable of causing or contributing to air pollution. We encourage the development and operation of the wells in a manner that is consistent with good air pollution control practices for minimizing emissions.
2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.
3. Oil and gas related construction activities located within tribal boundaries within North Dakota may be required to obtain a permit to discharge storm water runoff from the U.S. Environmental Protection Agency. Further information may be obtained from the U.S. EPA website or by calling the U.S. EPA - Region 8 at (303) 312-6312. Also, cities or counties may impose additional requirements and/or specific best management practices for

Environmental Health
Section Chief's Office
701.328.5150

Division of
Air Quality
701.328.5188

Division of
Municipal Facilities
701.328.5211

Division of
Waste Management
701.328.5166

Division of
Water Quality
701.328.5210

Joey Sheeley

2.

October 15, 2009

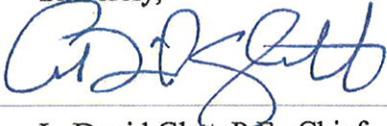
construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

A handwritten signature in blue ink, appearing to read "L. David Glatt", is written over a horizontal line.

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.



Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.



DK-5000
ENV-6.00

United States Department of the Interior

BUREAU OF RECLAMATION

Dakotas Area Office
P.O. Box 1017
Bismarck, North Dakota 58502



OCT 16 2009

Mr. Joey Sheeley
Planning Specialist
SWCA Environmental Consultants
1043 Coffeen Avenue, Suite D
Sheridan, WY 82801

Subject: Solicitation for Environmental Assessment for Drilling and Completion of Nine Proposed Oil and Gas Exploratory Wells on the Fort Berthold Reservation in Dunn and McKenzie Counties, North Dakota

Dear Mr. Sheeley:

This letter is written to inform you that two letters sent on or about September 29 were received and the information and maps have been reviewed by Bureau of Reclamation staff.

Proposed oil well sites located in Dunn and McKenzie Counties could potentially affect Reclamation facilities in the form of the rural water pipelines of the Fort Berthold Rural Water System. Only one of the proposed well sites is located in the vicinity of a water pipeline either existing or proposed for construction. The site is Dakota -3 Fettig #3-6H located in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ section 6, T148N, R94W in Dunn County.

However, there are no water lines proposed for construction in the following list of potential well site locations that you provided.

Dunn County

LL#3: SE $\frac{1}{4}$ SE $\frac{1}{4}$ section 8, T147N, R93W

LL#4: NE $\frac{1}{4}$ NE $\frac{1}{4}$ section 17, T147N, R93W

LL#5: SW $\frac{1}{4}$ SW $\frac{1}{4}$ section 9, T147N, R93W

LL#6: NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 16, T147N, R93W

Dakota -3 Fast Dog #14-5H: SE $\frac{1}{4}$ SW $\frac{1}{4}$ section 5, T148N, R94W

Dakota -3 Patricia Charging (1979) #2-15H: NW $\frac{1}{4}$ NE $\frac{1}{4}$ section 15, T149N, R93W

McKenzie County

Dakota -3 Stenehjem #14-8H: SE $\frac{1}{4}$ SW $\frac{1}{4}$ section 8, T149N, R94W

Dakota -3 Pauline Grady #4-19H: NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 19, T149N, R94W

We are providing a map depicting the proposed water line alignments in the vicinity of the Dakota-3 Fettig #3-6H well site location that could potentially affect Reclamation facilities. Since Reclamation is the lead Federal agency for the Fort Berthold Rural Water System, we request that any work planned on the reservation be coordinated with Mr. Marvin Danks, Fort Berthold Rural Water Director, Three Affiliated Tribes, 308 4 Bears Complex, New Town, North Dakota 58763.

Thank you for providing the information and opportunity to comment. If you have any further questions, please contact me at 701-221-1288.

Sincerely,

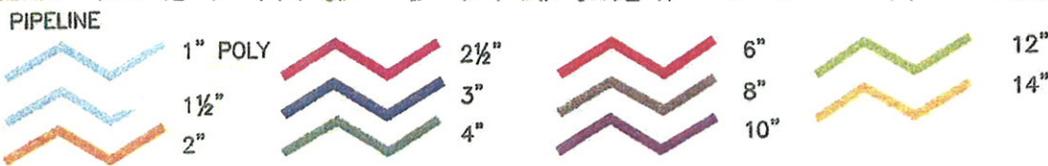
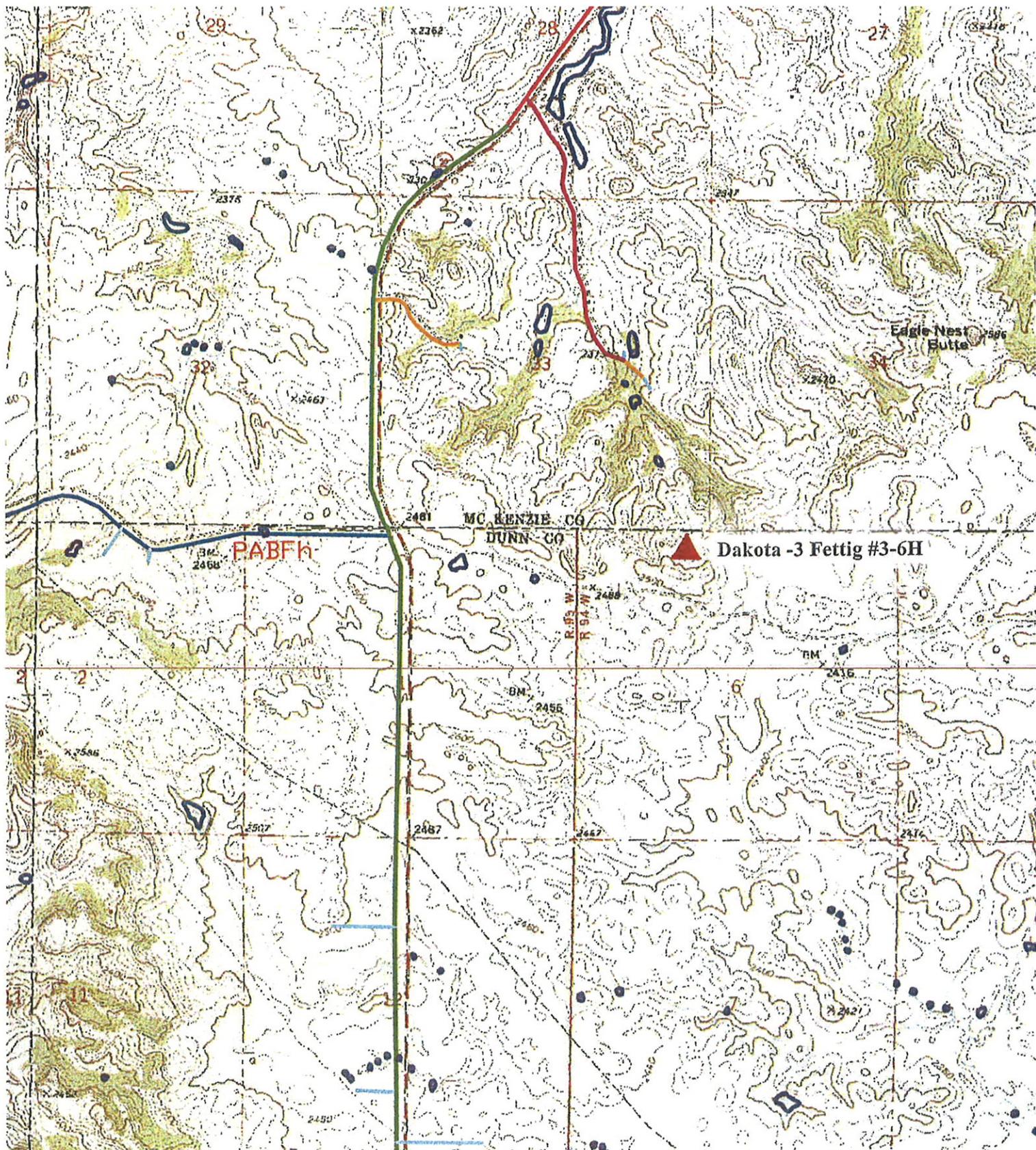
A handwritten signature in black ink that reads "Ronald D. Melhouse". The signature is written in a cursive style with a large, prominent "R" and "M".

Ronald D. Melhouse
Environmental Specialist

Enclosure

cc: Mr. Marvin Danks
Fort Berthold Rural Water Director
Three Affiliated Tribes
308 4 Bears Complex
New Town, ND 58763

Bureau of Indian Affairs
Great Plains Regional Office
Attention: Ms. Marilyn Bercier
Regional Environmental Scientist
115 Fourth Avenue S.E.
Aberdeen, SD 57401
(w/encl)





REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

October 20, 2009

Planning, Programs, and Project Management Branch

Ms. Joey Sheeley
SWCA Environmental Consultants
1043 Coffeen Avenue, Suite D
Sheridan, Wyoming 82801

Dear Ms. Sheeley:

The U.S. Army Corps of Engineers, Omaha District (Corps) has reviewed your letter dated September 29, 2009 regarding proposed drilling and completion of up to five exploratory oil and gas wells at five surface locations on the Fort Berthold Reservation, North Dakota. The Corps offers the following comments:

Your plans should be coordinated with the U.S. Environmental Protection Agency, which is currently involved in a program to protect groundwater resources. If you have not already done so, it is recommended you consult with the U.S. Fish and Wildlife Service and the North Dakota Game and Fish Department regarding fish and wildlife resources. In addition, the North Dakota State Historic Preservation Office should be contacted for information and recommendations on potential cultural resources in the project area.

Since the proposed project does not appear to be located within Corps owned or operated lands we are providing no floodplain or flood risk information. To determine if the proposed project may impact areas designated as a Federal Emergency Management Agency special flood hazard area please consult the following floodplain management office.

North Dakota State Water Commission
Jeff Klein
900 East Boulevard Avenue
Bismarck, North Dakota 58505-0850
jjkein@nd.gov
T-701-328-4898
F-701-328-3747

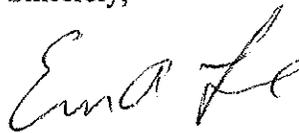
Any proposed placement of dredged or fill material into waters of the United States (including jurisdictional wetlands) requires Department of the Army authorization under Section 404 of the Clean Water Act. You can visit the Omaha District's Regulatory website for permit applications and related information. Please review the information on the provided web site (<https://www.nwo.usace.army.mil/html/od-r/district.htm>) to determine if this project requires a 404 permit. For a detailed review of permit requirements, preliminary and final project plans should be sent to:

U.S. Army Corps of Engineers
Bismarck Regulatory Office
Attention: CENWO-OD-R-ND/Cimarosti
1513 South 12th Street
Bismarck, North Dakota 58504

Thank you in advance for notifying us when the draft Environmental Assessment (EA) will be available for review.

If you have any questions, please contact Mr. John Shelman of my staff at (402) 995-2708.

Sincerely,



 Brad Thompson
Chief, Environmental Resources and Missouri Recovery
Program and Plan Formulation, Planning Branch
Planning, Programs and Project Management Division