United States Department of the Interior

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

IN REPLY REFER TO:
DESCRM
MC-208

OCT 29 2012

MEMORANDUM

TO: Acting Superintendent, Fort Berthold Agency

FROM: Regional Director, Great Plains Region

SUBJECT: Environmental Assessment and Finding of No Significant Impact

In compliance with the regulations of the National Environmental Policy Act (NEPA) of 1969, as amended, an Environmental Assessment has been completed and a Finding of No Significant Impact (FONSI) has been issued. The EA authorizes land use for up to two Bakken oil and gas wells located on the proposed Myrtle Old Dog #24H well pad on the Fort Berthold Indian Reservation.

All the necessary requirements of the National Environmental Policy Act have been completed. Attached for your files is a copy of the EA, FONSI and Notice of Availability. The Council on Environmental Quality (CEQ) regulations require that there be a public notice of availability of the (40 C.F.R. Section 1506.6(b)). Please post the attached notice of availability at the Agency and Tribal buildings for 30 days.

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

Tim LaPointe

Attachment

cc: Tex Hall, Chairman, Three Affiliated Tribes (with attachment)
Elgin Crows Breast, Tribal Historic Preservation Officer (with attachment)
Daniel Velder, BLM, Bureau of Land Management (with attachment)
Damien Reinhart, SWCA (with attachment)
Eric Wortman, EPA (with attachment)
Carson Hood/Fred Fox, MHA Energy Dept. (with attachment)
Jonathon Shelman, Corps of Engineers (e-mail)
Jeff Hunt, Fort Berthold Agency (e-mail)

Finding of No Significant Impact

WPX Energy Williston, LLC
Environmental Assessment
For:

Two Bakken/Three Forks Oil and Gas Wells (HA and HB) on the Proposed Myrtle Old Dog #24H Well Pad

Fort Berthold Indian Reservation
McKenzie County, North Dakota

The U.S. Bureau of Indian Affairs (BIA) has received a proposal to drill a Two Bakken/Three Forks Oil and Gas Wells (HA and HB) on the Proposed Myrtle Old Dog #24H Well Pad on the Fort Berthold Reservation. The proposed well pad, access road, and utility corridor would be located in the SW¼ SW¼ Section 13, Township (T) 149 North (N), Range (R) 94 West (W), McKenzie County, North Dakota. Associated federal actions by BIA include determinations of effect regarding environmental resources and positive recommendations to the Bureau of Land Management regarding the Applications for Permit to Drill.

The potential of the proposed action to impact the human environment is analyzed in the following Environmental Assessment (EA), as required by the National Environmental Policy Act. Based on the EA, I have determined that the proposed project will not significantly affect the quality of the human or natural 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 solicited for the preceding NEPA document was sufficient to ascertain potential environmental concerns associated with the currently proposed project.
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 alternatives.
3. Guidance from the U.S. Fish and Wildlife Service has been fully considered regarding wildlife impacts, particularly in regard to threatened or endangered species. This guidance includes the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.) (NEPA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", and the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA).
4. The proposed action is 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 project will improve the socio-economic condition of the affected Indian community.

Tim LaPointe

Acting Regional Director

10-29-2012

Date

Notice of Availability and Appeal Rights

WPX Energy Williston, LLC: Twq Bakken/Three Forks Oil and Gas Wells (HA and HB) on the Proposed Myrtle Old Dog #24H Well Pad

The Bureau of Indian Affairs (BIA) is planning to issue administrative approvals related to Two Bakken/Three Forks Developmental Oil and Gas Wells (HA and HB) on the Proposed Myrtle Old Dog #24H Well Pad on the Berthold Reservation as shown on the attached map. Construction by WPX is expected to begin in 2012.

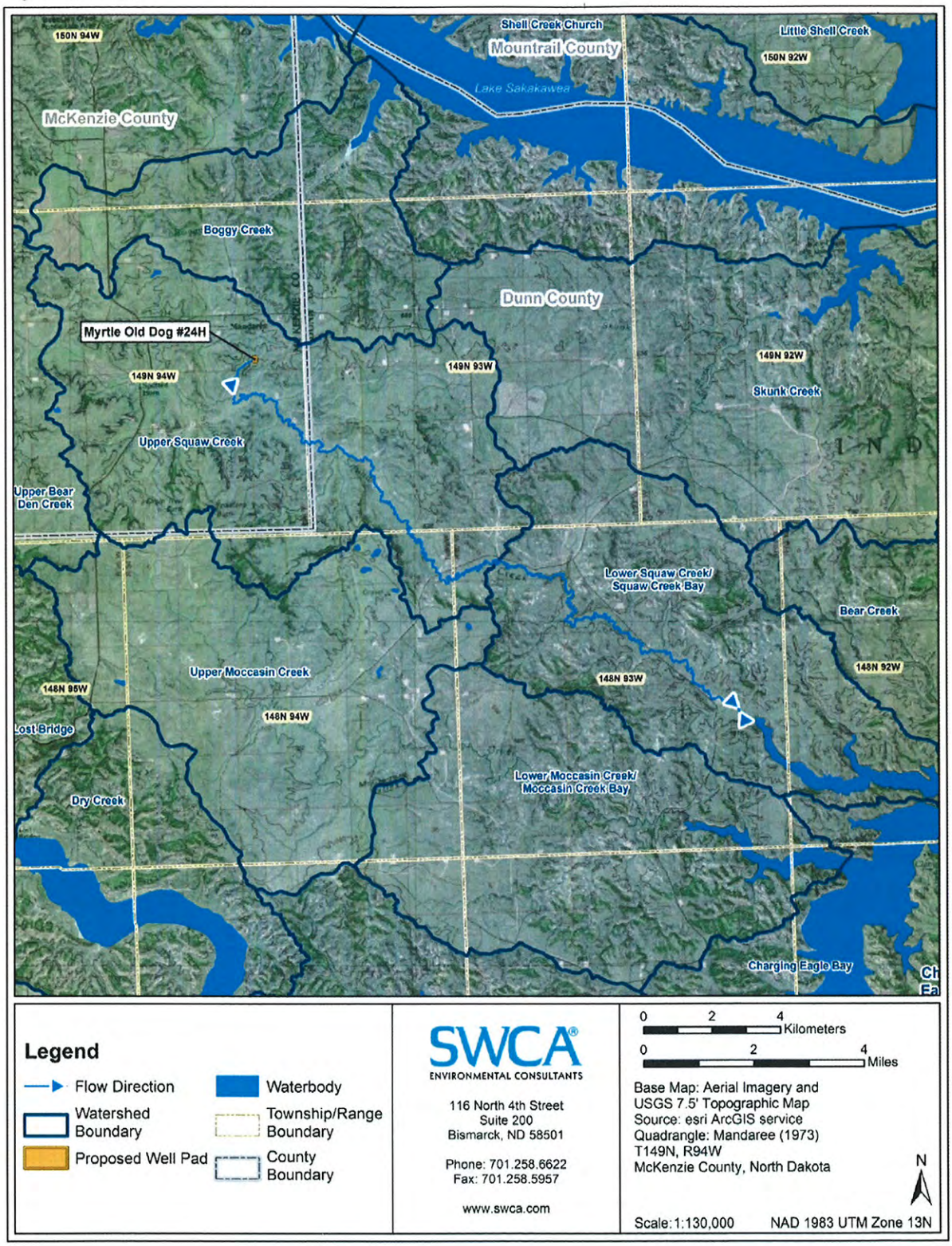
An environmental assessment (EA) determined that proposed activities will not cause significant impacts to the human environment. An environmental impact statement is not required. Contact Earl Silk, Superintendent at 701-627-6570 for more information and/or copies of the EA and the Finding of No Significant Impact (FONSI).

The FONSI is only a finding on environmental impacts – it is not a decision to proceed with an action and *cannot* be appealed. BIA's decision to proceed with administrative actions *can* be appealed until November 27, 2012, by contacting:

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

Procedural details are available from the BIA Fort Berthold Agency at 701-627-6570.

Project locations.



ENVIRONMENTAL ASSESSMENT

United States Department of the 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

WPX Energy Williston, LLC

Two Potential Bakken/Three Forks Developmental Oil and Gas Wells (HA and HB) on the Proposed Myrtle Old Dog #24H Well Pad

Fort Berthold Indian Reservation

October 2012

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

TABLE OF CONTENTS

Page

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION 1
2.0 FEDERAL AND OTHER RELEVANT REGULATIONS AND AUTHORITIES 2
3.0 PROPOSED ACTION AND THE NO ACTION ALTERNATIVE 3
3.1 The No Action Alternative 3
3.2 The Proposed Action 3
3.2.1 Myrtle Old Dog #24H Well Pad 6
3.2.2 Well Pad and Infrastructure Locations 7
3.2.3 Well Pad 7
3.2.4 Access Road and Utility Corridor 7
3.2.5 Well Drilling 10
3.2.6 Casing and Cementing 12
3.2.7 Completion and Evaluation 12
3.2.8 Commercial Production 12
3.2.9 Field Camp 13
3.2.10 Reclamation 14
3.3 BIA-Preferred Alternative 15
4.0 THE AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS 16
4.I Physical Setting 16
4.2 Air Quality 16
4.2.1 Air Quality Standards for Criteria Pollutants 16
4.2.2 Greenhouse Gas Emissions and Climate Change 20
4.2.3 Hazardous Air Pollutants 22
4.2.4 Existing Air Quality in the Project Area 23
4.2.5 Typical Project Emissions from Oilfield Development 24
4.2.6 Air Quality Best Management Practices 25
4.2.7 Potential Air Quality Impacts 25
4.3 Water Resources 26
4.3.1 Surface Water 26
4.3.2 Groundwater 27
4.3.3 Potential Impacts to Surface Water and Groundwater Resources 31
4.4 Soils 35
4.4.1 Natural Resources Conservation Service Soil Data 35
4.4.2 Potential Impacts from Soil Erosion 38
4.5 Wetlands 39
4.6 Vegetation and noxious weeds 40
4.6.1 Vegetation Data 40
4.6.2 Noxious Weeds 40
4.6.3 Potential Impacts on Vegetation and Noxious Weeds 41
4.7 Wildlife 42
4.7.1 General Wildlife Species Occurrence and Habitat 42
4.7.2 Potential Impacts to Wildlife 42
4.7.3 Threatened and Endangered Species Occurrence and Habitat 43
4.8 Cultural Resources 48
4.9 Public Health and Safety 49

4.9.1 Potential Impacts to Public Health and Safety 50
4.10 Socioeconomics 50
4.10.1 Socioeconomic Analysis Area 50
4.10.2 Population and Demographic Trends 50
4.10.3 Employment 51
4.10.4 Income 53
4.10.5 Housing 54
4.10.6 Potential Impacts to Socioeconomics 56
4.11 Environmental Justice 57
4.11.1 Potential Impacts to Environmental Justice 60
4.12 Mitigation and Monitoring 61
4.12.1 General BMPs 62
4.12.2 Mitigation and Safety Measures Committed to by WPX 64
4.13 Irreversible and Irretrievable Commitment of Resources 67
4.14 Short-Term Use versus Long-Term Productivity 67
4.15 Cumulative Impacts 67
4.15.1 Environmental 67
4.15.2 Air Quality 70
4.15.3 Hydrology 70
4.15.4 Access Roads 70
4.15.5 Erosion Control BMPs 70
4.15.6 Vegetation 71
4.15.7 Wildlife 71
4.15.8 Cultural Resources 71
4.15.9 Socioeconomic 71
4.15.10 Hydraulic Fracturing 72
4.15.11 Reclamation 72
5.0 CONSULTATION AND COORDINATION 73
6.0 LIST OF PREPARERS 78
7.0 REFERENCES 79
8.0 ACRONYMS 85

TABLE OF CONTENTS (continued)

LIST OF FIGURES

Figure **Page**
Figure 3-1. Proposed Action project area overview map with watershed boundaries and well pad surface runoff path to Lake Sakakawea. 4
Figure 3-2. Proposed Myrtle Old Dog #24H well pad and utility corridor location....5
Figure 3-3. Typical road cross sections (BLM and USFS 2007)....9
Figure 3-4. Proposed Myrtle Old Dog #24H infrastructure location and spacing unit boundary.11
Figure 3-5. Typical drilling rig (Ruffo 2009)....12
Figure 3-6. Typical producing oil well pad....13
Figure 3-7. Example of reclamation from the BLM Gold Book (BLM and USFS 2007)....15
Figure 4-1. Temperature anomalies in the contiguous United States, 1979–2009. 21
Figure 4-2. Typical stratigraphic column of the Williston Basin, with oil and gas bearing formations (Peterson 1995)....33
Figure 4-3. Approximate spatial extent of soil types within and around the proposed Myrtle Old Dog #24H well pad. 36
Figure 4-4. Vegetation at the Myrtle Old Dog #24H project area. Photo taken June 19, 2012.40
Figure 4-5. Existing and projected future oil and gas development within a 1-, 5-, 10-, and 20-mile radius of the proposed Myrtle Old Dog #24H well pad location....69

LIST OF TABLES

Table **Page**
Table 4-1. NAAQS and Other Air Quality Standards....19
Table 4-2. Maximum Levels of Monitored Pollutants, 2007–2010, as Measured at Dunn Center and Theodore Roosevelt National Park North Unit Monitoring Stations. 23
Table 4-3. Common Aquifers in the Proposed Project Area and Surrounding Region. 28
Table 4-4. Existing Water Wells within 5 Miles of the Proposed Myrtle Old Dog #24H Well Pad....29
Table 4-5. Common Additives of Hydraulic Fracturing Fluid. 30
Table 4-6. Percentage of the Project Area Comprised of Specific Soil Types. 37
Table 4-7. Recognized State Noxious Weed Occupied Area in McKenzie County, North Dakota. 41
Table 4-8. Summary of Potential Effects to Threatened and Endangered Species....44
Table 4-9. Population and Demographic Trends in the Analysis Area. 51
Table 4-10. 2010 Total Employment and Unemployment Rates....52
Table 4-11. Income and Poverty in Analysis Area. 53
Table 4-12. Housing Data for the Reservation and Study Area Counties. 55
Table 4-13. Duration of Employment during Proposed Project Implementation. 56
Table 4-14. Minority Population Breakdown by North Dakota County and Race, 2000–2010.59
Table 4-15. Individual Poverty Rates and Median Household Income for the Analysis Area.60
Table 4-16. Number of Confidential, Active, and Permitted Wells Surrounding the Project Area. 68
Table 5-1. Scoping Comments....74

TABLE OF CONTENTS (continued)

LIST OF APPENDICES

Appendix

A Construction Schematics (Plats) for the Myrtle Old Dog #24H Well Pad and Utility Corridor (Received 08/07/12)
B Species Accounts and Affects Determinations
C Consultation Reply from MHA THPO
D U.S. Fish and Wildlife Service Informal Section 7 Consultation and Concurrence Letters
E General Scoping Letter

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

Developments have been proposed on lands held in trust by the United States on the Fort Berthold Indian Reservation (the Reservation) in McKenzie County, North Dakota, in locations that target specific areas in the Bakken/Three Forks Formation, a known oil reserve. The Bureau of Indian Affairs (BIA) is the surface management agency for potentially affected tribal lands and individual allotments, in addition to managing lands held in title by the tribe and tribal members with subsurface mineral rights. The BIA's primary 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, could benefit substantially from the development of oil and gas exploration on the Reservation. This environmental assessment (EA) is based on the need for analysis of any proposed endeavor under BIA jurisdiction.

This EA addresses the potential impacts associated with the construction, and possible long-term operation, of facilities and locations discussed in the Proposed Action by WPX Energy Williston, LLC (WPX). This includes the potential drilling of two oil and gas wells on one proposed well pad and the installation of a utility corridor consisting of an access road; oil, gas, and produced water gathering pipelines; electric and fiber optic utility lines; and temporary above-ground freshwater pipelines.

2.0 FEDERAL AND OTHER RELEVANT REGULATIONS AND AUTHORITIES

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 Action 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 the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations (Title 40 Code of Federal Regulations [CFR] 1500–1508), 43 CFR 3100, and Onshore Oil and Gas Order Nos. 1, 2, 6, and 7 is required due to the project's 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. Informal Section 7 consultation and compliance with Section 106 regulations are adhered to. In addition, applications to the U.S. Army Corps of Engineers under Section 10 of the Clean Water Act of 1972 are prepared on an as-needed basis.

This EA analyzes potential impacts to elements in the natural and human environments for both the No Action Alternative (described in Section 3.1) and the Proposed Action. Impacts may be beneficial or detrimental, direct or indirect, and short-term or long-term. This EA also analyzes the potential for cumulative impacts and ultimately makes a determination as to the significance of any impacts.

In the absence of significant negative consequences, this EA would result in a Finding of No Significant Impact. Should significant adverse impacts be identified as a result of the direct, indirect, or cumulative effects of the Proposed Action, then NEPA requires the preparation of an environmental impact statement. It should be noted that a significant benefit from the project does not necessarily require preparation of an environmental impact statement. Commercial viability of the proposed wells could result in additional exploration in the area, and any future oil/gas exploration activities and associated federal actions that are proposed wholly or partly on trust land would require additional NEPA analysis and BIA consideration prior to implementation and/or production activities.

WPX will comply with all applicable federal, state, and tribal laws, rules, policies, regulations, and agreements. WPX also agrees to follow all best management practices (BMPs) and monitoring mitigations described in this EA and listed in Section 4.12. No disturbance of any kind would begin until all required clearances, consultations, determinations, easements, leases, permits, and surveys are in place.

3.0 PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

The BIA, as required by 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, the BIA is considering the Proposed Action.

3.1 THE NO ACTION ALTERNATIVE

Under the No Action Alternative, the Proposed Action (including the well pad, wells, access road, gathering pipelines, and electric and fiber optic lines) 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 this project 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 (EJ). There would be no project-related ground disturbance, use of hazardous materials, or trucking of product to collection areas. Surface disturbance, deposition of potentially harmful biological material, 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 from the discovery and resulting development of resources at these well locations.

3.2 THE PROPOSED ACTION

In addition to the No Action Alternative, this document analyzes the potential impacts of one new developmental oil and gas well pad, including two potential oil and gas wells, an access road, gathering pipelines, and buried electric and fiber optic utility lines, located in the west-central portion of the Reservation in McKenzie County, North Dakota.

WPX has acquired the mineral leases and is proposing to drill two potential oil wells on the proposed Myrtle Old Dog #24H well pad (well pad) within the boundary of the Reservation. The proposed well pad is described below, and illustrated in Figures 3-1 and 3-2. Well surface hole locations, shown in Figure 3-2, were chosen by WPX in consultation with tribal and BIA resource managers to provide development resources for the Bakken/Three Forks Formation. Bottom hole locations are under the jurisdiction of the North Dakota Industrial Commission and BLM.

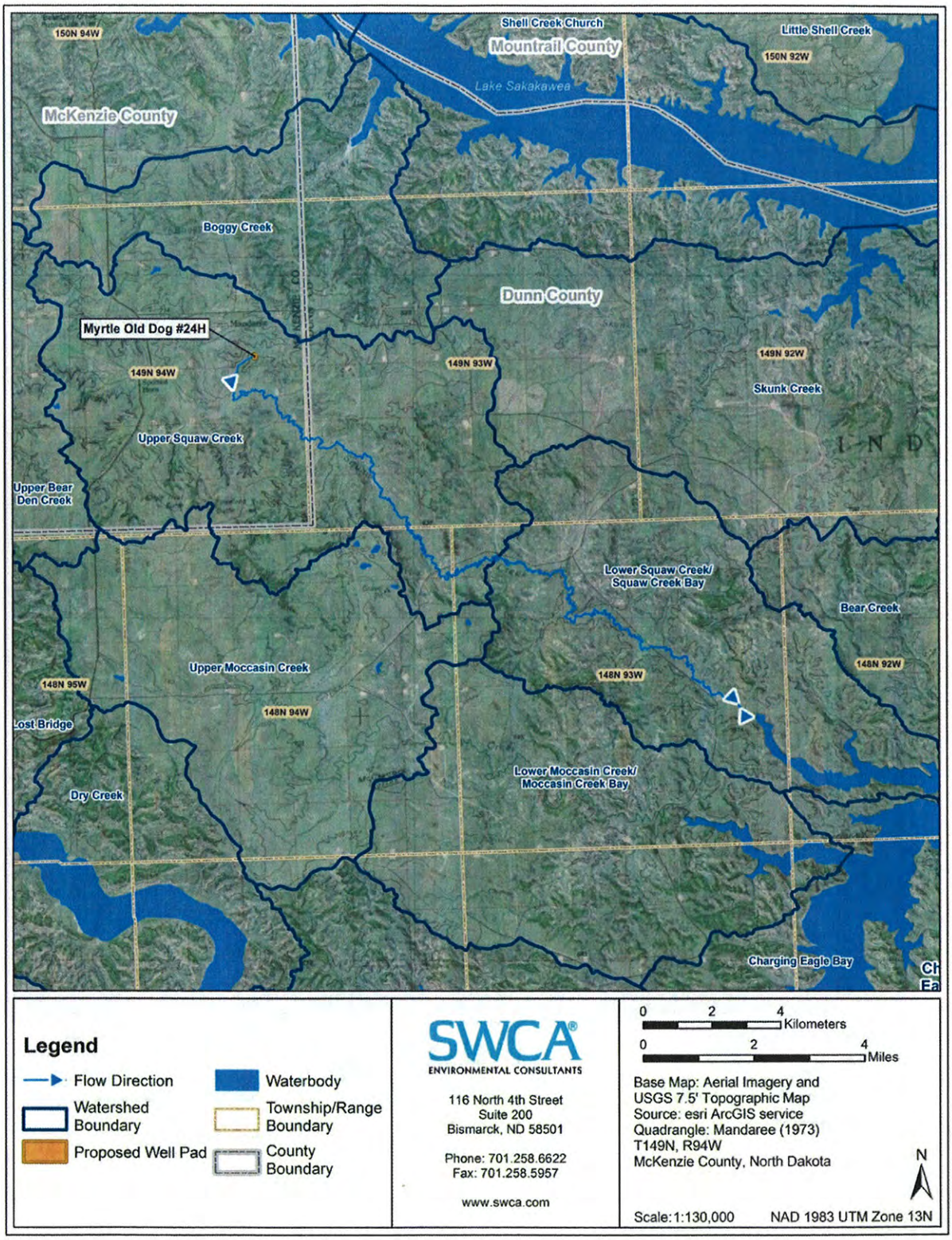


Figure 3-1. Proposed Action project area overview map with watershed boundaries and well pad surface runoff path to Lake Sakakawea.

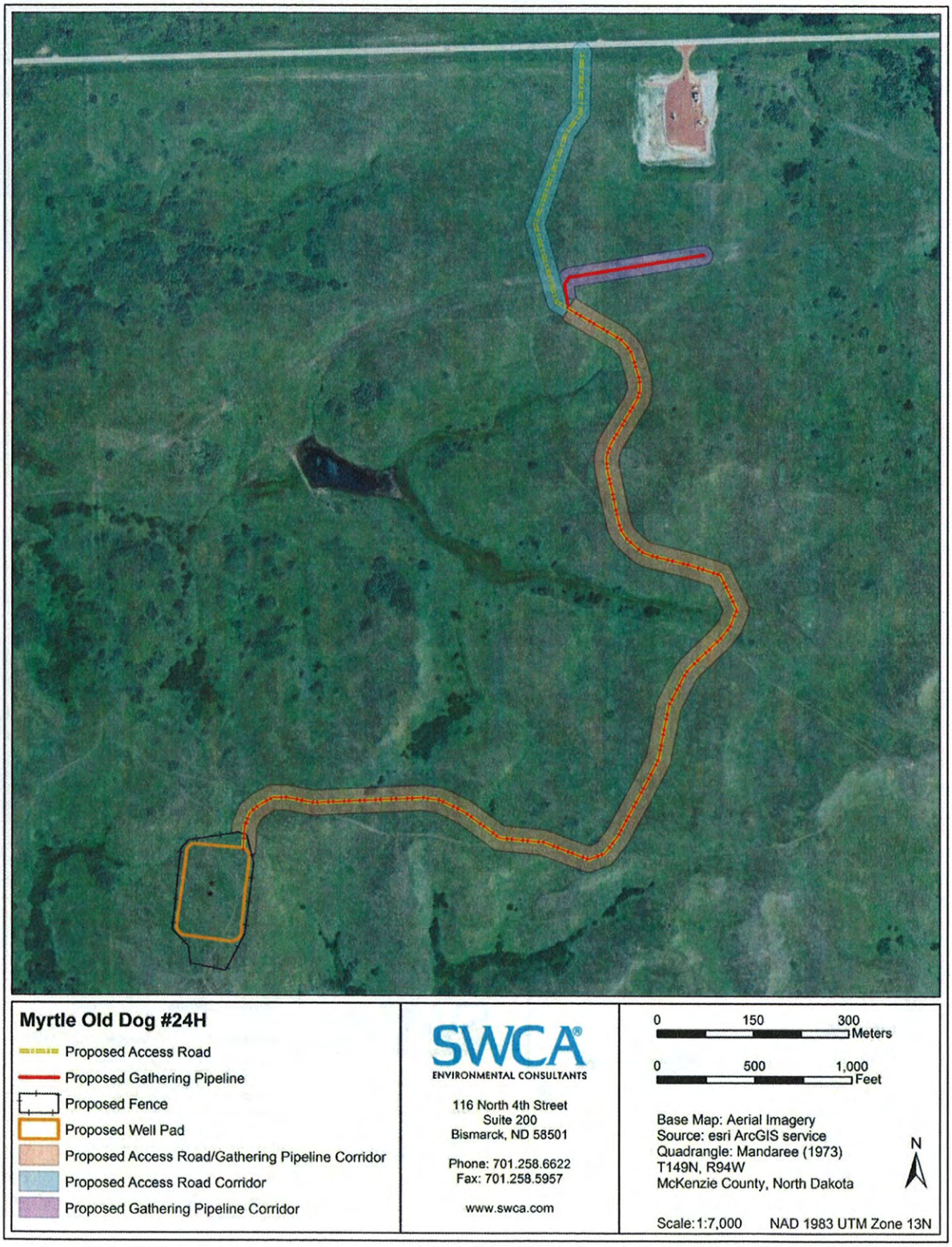


Figure 3-2. Proposed Myrtle Old Dog #24H well pad and utility corridor location.

3.2.1 Myrtle Old Dog #24H Well Pad

WPX proposes construction and operation of the well pad in order to develop the oil potential previously found in the Bakken/Three Forks Formation by exploration wells and to serve as a centralized location to house production facilities servicing two oil and gas wells. The proposed well pad, access road, and utility corridor would be located in the SW¼ SW¼ Section 13, Township (T) 149 North (N), Range (R) 94 West (W), McKenzie County, North Dakota. The proposed well pad would be within a 5.19-acre fenced area, resulting in the following proposed surface disturbance in addition to the utility corridor.

- Surface disturbance for utility corridor containing both access road and gathering pipelines: 16.89 acres.
- Surface disturbance for portion of utility corridor containing only access road: 3.35 acres.
- Surface disturbance for portion of utility corridor containing only gathering pipelines: 1.87 acres.
- Post-interim reclamation well pad disturbance area: 2.63 acres.

Construction schematics (plats) for the proposed well pad are provided in Appendix A. As shown, the fenced area would include topsoil piles, soil berms, pump jacks, tanks, and heater/treaters. A cattle guard would be placed at the point of intersection between the well pad and access road and straw rolls, check dams, and matting would be installed to ensure soil stability and prevent erosion.

During well pad and utility corridor construction, an access road, oil, gas, and produced water gathering pipelines, electric and fiber optic utility lines, and temporary above-ground freshwater pipelines would be constructed and installed within a 130-foot-wide utility corridor ROW. Approximately 5,714.09 feet from the well pad, the oil, gas, and produced water pipelines would diverge northeast than east for approximately 873.08 feet to connect to the Cross #2-13 gathering pipeline system. The pipelines would be constructed within a 100-foot-wide ROW from the point of divergence to the interconnect with the Cross #2-13 gathering pipeline system. The ROW containing the access road and electric and fiber optic utility lines would be reduced to a width of 100 feet from the divergence of the gathering pipelines and travel approximately 1,420.14 feet north to connect to BIA Road 12.

WPX proposes location-specific containment measures to safeguard against a highly unlikely unanticipated release. These include installing 24-inch synthetically enhanced berms around the edges of the well pad, locating secondary containment in the form of topsoil and spoils stockpiles at the tops of drainages to prevent any offsite movement events, and rounding corners of the well pad. In addition, contained storm water, sediments, and errant hydrocarbons would be removed via a vacuum truck and disposed of at an approved facility.

Interim reclamation activities for this undertaking would reclaim 2.56 acres from the initial well pad surface disturbance. All components (e.g., well pad, access road, gathering pipelines, electric and fiber optic utility lines, storage areas, and supporting facilities) would be reclaimed upon final abandonment unless formally transferred, with federal approval, to either the BIA or the landowner.

For these proposed facilities, WPX is considered the operator. WPX commits to follow and abide by all commitments and agreements discussed in this document and in *Emergency Spill Contingency Plan for Oil Gathering Systems Operated by WPX Energy in the Williston Basin of North Dakota* (WPX 2012).

3.2.2 Well Pad and Infrastructure Locations

Well pad and utility corridor locations, shown in Figure 3-2, were developed in consultation with tribal and BIA resource managers during a pre-clearance process that included surveys for cultural, archaeological, and natural (i.e., biological and physical) resources.

Interdisciplinary on-site meetings were conducted on June 19, 2012, to review the proposed location with regard to topography, potential drainage issues, and erosion control measures. Surveys were conducted by SWCA Environmental Consultants (SWCA) prior to that time to determine potential impacts to both natural and cultural resources. The on-site meetings were attended by the surveyors, SWCA natural and cultural resource specialists, WPX representatives, and a BIA representative.

3.2.3 Well Pad

The proposed well pad would include a leveled area (pad) that would be used for the drilling rig and equipment. The pad would be stripped of topsoil and vegetation and then graded. The topsoil would be stockpiled and stabilized with native grasses until it could be used to reclaim and revegetate the disturbed area. The subsoils 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. WPX would surround the well pad with a 24-inch synthetically enhanced containment berm, in addition to steel containment barriers around the tank battery, designed to hold 110% of the largest tank plus one full day's daily production volume, to prevent hazardous runoff or spills.

Additional BMPs for erosion control would be implemented and would include surface drainage controls, soil surface protection methodologies, and sediment capture features (refer to Section 4.12). The well pad would be surrounded by a fence to keep livestock off site as well as any unauthorized individuals from possible injuries sustained by wandering on site. At the point where the access road and fence meet, a cattle guard would be installed.

The well pad would use a closed-loop system, in which cuttings and fluid would be hauled off site and disposed of at an approved facility. A cuttings pit would only be constructed in the event of an accident during drilling in which cleanup crews could not reach the location for an extended time. The pit would be used to hold the waste until cleanup could be completed so as not to impede drilling operations, and would then be reclaimed; any fluids and cuttings would be transported off site to be disposed of at an approved facility.

3.2.4 Access Road and Utility Corridor

Approximately 1.4 miles of new access road would be constructed within variable ROW widths to connect the proposed well pad to BIA Road 12. The utilities and access road would be collocated in the same ROW for the majority of the length of the corridor, and would consist of an access road; oil, gas, and produced water gathering pipelines; electric and fiber optic utility lines; and temporary above-ground freshwater pipelines. The gathering pipelines

would split off from the main 130-foot-wide utility corridor and connect to the Cross #2-13H gathering pipeline system within a reduced 100-foot-wide ROW. At the point of divergence, the main utility corridor, containing only the access road and electric and fiber optic utility lines, would continue north, with the ROW width being reduced from 130 feet to 100 feet until intersecting with BIA Road 12. Signed agreements would be in place allowing road and utility construction across affected allotted land surfaces, and any applicable approach permits and/or easements would be obtained prior to any construction activity.

Oil, gas, and produced water pipelines would be buried in two 2.5-foot-wide trenches, spaced 5.0 feet apart, or one 5.0-foot-wide trench. Oil and gas pipelines would be no greater than 8 inches in diameter and constructed of steel. The water pipeline would also be no greater than 8 inches in diameter and constructed of Fiberspar® or similar corrosion resistant material. Technical descriptions for the materials, corrosion rates, spill response plans, pipeline marking procedures, quality assurance/quality control, valve locations, boring locations, and reclamation plans are Arrows' specific procedures for pipeline construction.

Arrow adheres to the requirements of 49 CFR 192.707 with regard to the marking of buried pipelines. Specifically, Arrow would place pipeline markers within 1,000 feet of one another at all public road crossings, railroad crossings, creek crossings, and fence crossings, and at all points of major direction change.

Arrow purchases steel pipe that is rated as American Petroleum Institute (API) 5L X52 and inspects all pipe while at the mill to ensure quality. Arrow is also present to ensure that external epoxy coating is applied to a minimum thickness of 14 millimeters. During construction, all welds are visually inspected for quality and completeness by qualified professionals. Once welds have passed visual inspection, they are subjected to 100 percent non-destructive testing. After passing these tests, the weld areas are covered for corrosion protection. After the weld areas have been covered, the external coating of the pipe is inspected using a jeep meter to detect holes and cracks. The pipe is lowered into the trench and buried. Prior to being put into service, the steel pipe is hydrotested to approximately 1.5 times the minimum design pressure of 1,180 pounds per square inch gauge (psig).

The produced water pipe is designed to sustain a minimum pressure of 750 psig and is hydrotested to approximately 900 psig prior to being approved for service. Two valves would be installed at each end of the proposed pipelines. One valve would be installed at the well location and the second valve would be installed at the proposed tie-in. The installation of two valves would allow Arrow to isolate the proposed gathering pipelines, if required.

Arrow has developed a Spill Response Plan (Plan) (Middick 2011) for the Phase 3 southwest pipeline. The spill preventative measures and monitoring protocols, notification procedures, spill detection and on-scene spill mitigation procedures, response activities, contacts, training and drill procedures, and response plan review and update procedures, as referenced in the Plan, apply to the proposed pipelines, so long as Arrow remains the operator. A copy of the Plan has been filed with the BIA and Arrow has legally committed to adhering to the procedures and requirements as defined by federal law (49 CFR 194). Arrow, on behalf of WPX, has committed to developing a project-specific spill response plan that will be submitted to the BIA prior to the commencement of construction activities.

Access road construction would follow road design standards outlined in the BLM Gold Book (BLM and U.S. Forest Service [USFS] 2007). At a minimum, 8 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 seeded 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 are located along existing major roads. The access road would be surfaced with a minimum of 4 inches of aggregate if the site were to be established as a commercial production site. Also, the roadway would remain in use for the life of the wells. Details of road construction are addressed in the APD. A diagram of typical road cross sections is provided in Figure 3-3.

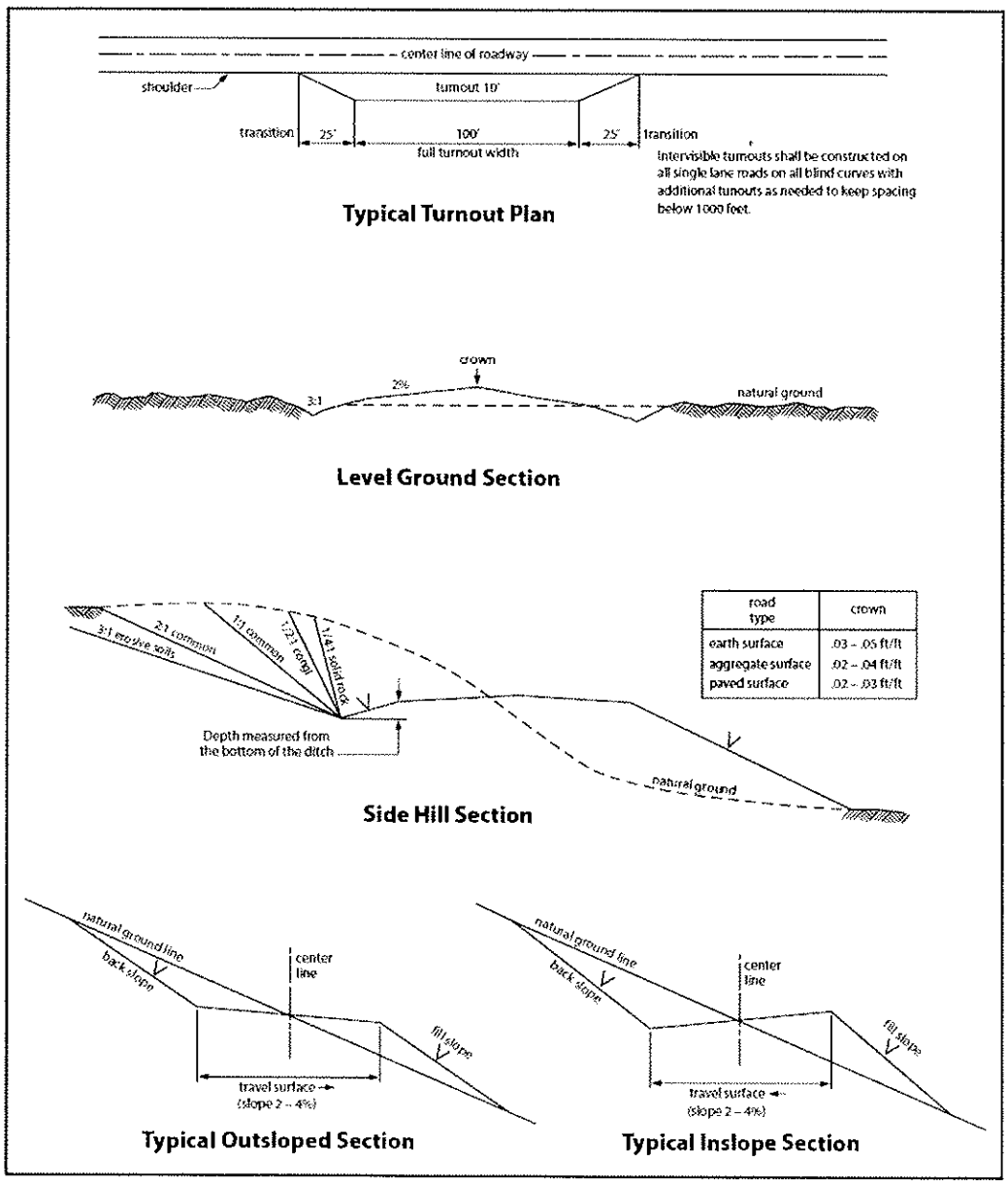


Figure 3-3. Typical road cross sections (BLM and USFS 2007).

3.2.5 Well Drilling

The currently proposed approximate bottom hole targets and drilling paths are summarized below and illustrated in Figure 3-4.

3.2.5.1 Proposed Bottom Hole Locations

The spacing unit consists of 640 acres (+/-) with the following proposed bottom hole and drilling target locations (Figure 3-4).

- **#24HA:** Approximately 550 feet from the west line and 250 feet from the south line in the SW¼ SW¼ Section 24, T149N, R94W.
- **#24HB:** Approximately 1,943 feet from the west line and 250 feet from the south line in the SE¼ SW¼ Section 24, T149N, R94W.

After securing ROW leases, WPX would submit the APDs to the BLM under separate cover. The BIA's office in New Town, North Dakota, would receive a copy of the APDs from the BLM North Dakota Field Office. Construction would 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 approximately seven days; a typical drill rig is shown in Figure 3-5. Drilling would require approximately 35 days per well to reach the target depth, using a rotary drilling rig rated for drilling to a depth of 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 (approximately 21,000 gallons total for this portion).

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 a 7-inch casing point. Oil-based drilling fluids reduce the potential for hole sloughing while drilling through water-sensitive formations (shales). Approximately 4,720 additional 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.

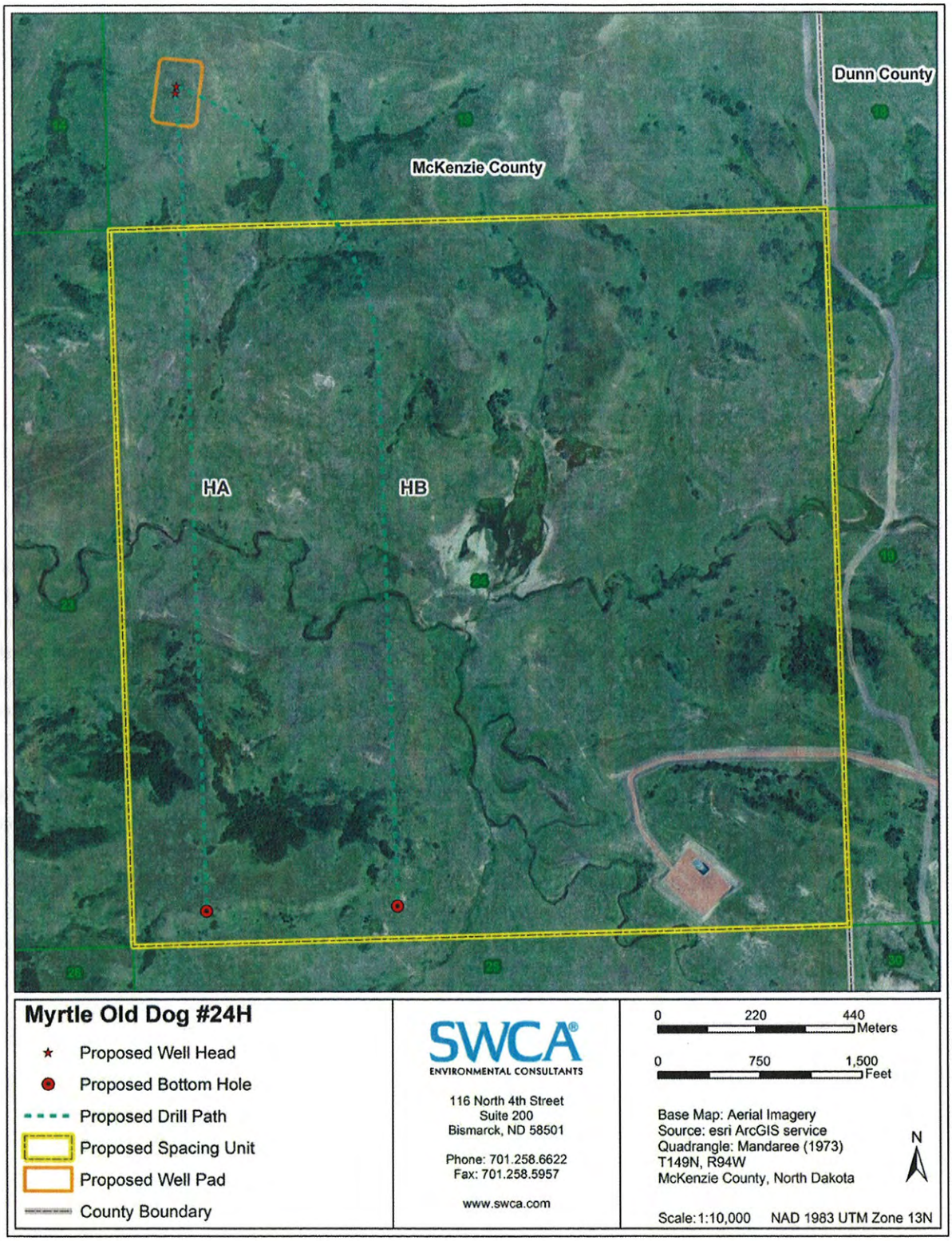


Figure 3-4. Proposed Myrtle Old Dog #24H infrastructure location and spacing unit boundary.

Figure 3-5. Typical drilling rig (Ruffo 2009).

3.2.6 Casing and Cementing

Surface casing would be set at an approximate depth of 2,500 feet and cemented back to the surface during drilling, isolating all near-surface freshwater aquifers in the project area. The Fox Hills Formation and Pierre Formation would be encountered at depths of approximately 1,700 and 1,800 feet, respectively. Production casing would be cemented from a depth approximately 11,256 feet up to 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).

3.2.7 Completion and Evaluation

A completion rig unit would be moved on site following the conclusion of drilling and casing activities. Approximately 30 days are 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) down-hole 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 rules and regulations and in compliance with applicable U.S. Environmental Protection Agency (EPA) guidelines (Section 4.3.2).

3.2.8 Commercial Production

If drilling, testing, and production support commercial production from the proposed well pad, additional equipment would be installed, including a pumping unit at the well head, a

vertical heater/treater, storage tanks (usually 400-barrel steel tanks), and a flare pit (Figure 3-6). An impervious metal dike sized to hold 110% 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. 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.

Figure 3-6. Typical producing oil well pad.

The duration of production operations cannot be reliably predicted, but some oil wells have been pumping for more than 100 years. The operator estimates that each of the wells would yield approximately 450 barrels of oil per day and 100 barrels per day of water during the first year of production. After the first year, the operator estimates production would decrease to approximately 250 barrels of oil per day and 50 barrels per day of water. Produced water is mostly recovered hydraulic fracturing (HF) fluids and is expected to become minimal after two years.

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

3.2.9 Field Camp

A few personnel would be housed in self-contained trailers for a very short period of time; long-term housing is not 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, then transported to, and disposed of at, state-approved facilities.

3.2.10 Reclamation

3.2.10.1 Interim Reclamation

Reclamation would continue over the life of the well pad and would include the return of topsoil, and contouring and seeding of native vegetation. Interim reclamation would be required six months after construction, if environmentally feasible, and then following any maintenance work or additions of infrastructure. Reclamation would be required before final abandonment of the decommissioned well pad. A successful reclamation would at all times be the responsibility of the operator.

The portions of the well pad and utility corridor not used for functionality would be back-filled, assuming frozen or saturated soils are not present. Topsoil piles would be stored on site during construction. If construction is to occur during winter, WPX would partially use non-frozen back-fill soil to the extent possible and cover the entire ROW with straw. Topsoil would be distributed as soon as practicable after the soil has defrosted. Topsoil piles would be covered to eliminate the potential for rill erosion and subsequent loss of soil during spring snow melt and precipitation events.

Applicable short- and long-term BMPs (Section 4.12) would be used to minimize and control erosion in disturbed areas. To reduce compaction, the access road and utility corridor ROWs and well pad area would be plowed before the stockpiled topsoil is distributed.

The disturbed areas would be reclaimed and contoured as soon as possible after construction is complete (fall/spring). The utility road ROW and disturbed area outside of the working well pad area would be covered with stockpiled topsoil and seeded with a seed mixture determined by the BIA.

A noxious weed survey would be conducted prior to construction covering the well pad and utility corridor ROW. WPX would control any noxious weeds within the ROW and other applicable facilities by approved chemical or mechanical methods, according to the weed management plan developed by the BIA to treat known or likely to occur noxious weed species. If seeding of the ROW does not occur due to growing season constraints, WPX would deploy approved weed-free hay across the entire ROW to reduce the potential for excessive erosion as a result of spring snow melt and precipitation.

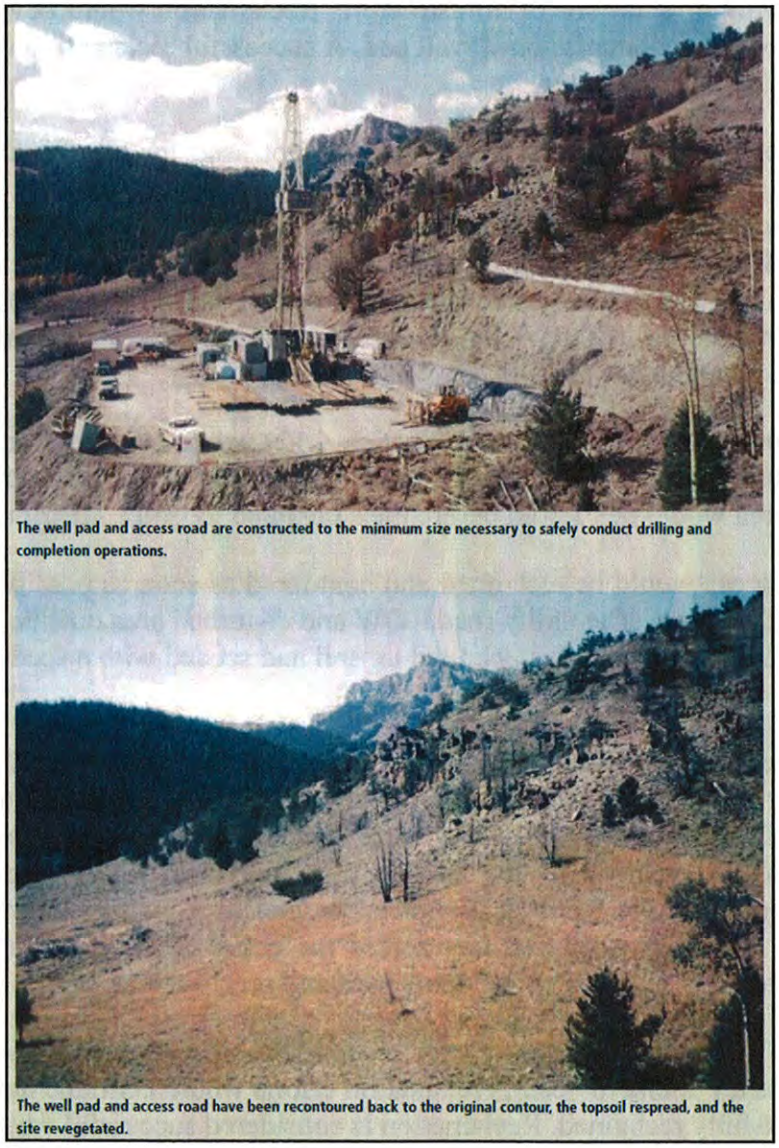
The entire ROW would be monitored for erosion, subsidence, and noxious weeds. In areas where problems are found to occur, reclamation efforts would continue until the BIA feels the ROW is successfully reclaimed. Reclamation is considered successful when:

- seeded areas are established;
- adjacent vegetative communities spread back into the disturbed areas; and
- noxious weeds are under control.

If the new seeding is not successful after two growing seasons, the BIA may require additional efforts to establish vegetation.

3.2.10.2 Final Reclamation

Final reclamation would occur when the well pad is decommissioned. All disturbed areas would be reclaimed, reflecting the BIA's view of oil and gas exploration and production as temporary intrusions on the landscape. All facilities would be removed. Access roads and work areas would be leveled or backfilled as necessary, scarified, recontoured, and 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 3-7 provides an example of reclamation (BLM and USFS 2007).



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 3-7. Example of reclamation from the BLM Gold Book (BLM and USFS 2007).

3.3 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 proposed well pad location.

4.0 THE AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

The broad definition of NEPA leads to the consideration of the following elements of the human and natural environments: 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 EJ.

4.1 PHYSICAL SETTING

The proposed well pad site and spacing unit would be in a rural area located on the Reservation in west-central North Dakota. The Reservation is the home of the MHA Nation and encompasses more than one million acres, of which almost half, including the project area, are held in trust by the United States for either the MHA Nation or individual allottees.

The proposed well pad, access road, and utility corridor would be 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/Three Forks Formation is a well-known source of hydrocarbons targeted by the Proposed Action. 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/Three Forks Formation feasible.

The Reservation is within the northern Great Plains ecological region, which consists of four physiographic units: 1) the Missouri Coteau Slope north of Lake Sakakawea; 2) the Missouri River trench (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 Plateau Slope. Elevations of the unglaciated, gently rolling landscape range from a normal pool elevation of 1,838 feet at Lake Sakakawea to approximately 3,300 feet in the Killdeer Mountains. 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°F and 83°F in July, with 95 to 130 frost-free days each year (U.S. Geological Survey 2010).

4.2 AIR QUALITY

4.2.1 Air Quality Standards for Criteria Pollutants

The federal Clean Air Act (CAA) (USC 7401–7671, as amended in 1990) established National Ambient Air Quality Standards (NAAQS) 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. NAAQS have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead (U.S. Environmental Protection Agency [EPA] 2011a). The primary NAAQS are 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."

The CAA mandates prevention of significant air quality deterioration in certain designated attainment areas and has designated more stringent air quality standards, known as Secondary Standards, for these areas. Class 1 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 (Ross 1990). The Class 1 regulations (40 CFR 51.307) attempt to protect visibility through a review of major new and modified sources of pollutants, and requiring strict air quality emission standards if they would have an adverse impact on visibility within the Class I area (National Park Service 2010).

The nearest designated attainment area to the project area is the Theodore Roosevelt National Park (TRNP), a Class 1 area that covers about 110 square miles in three units within the Little Missouri National Grassland. The TRNP is approximately 16 miles south of Watford City, North Dakota, and approximately 30 miles west of the proposed well sites. Two air quality monitoring stations are located within the TRNP, with the North Unit monitoring most criteria pollutants (National Park Service 2010; North Dakota Department of Health [NDDH] 2012). All other parts of the state, including the Reservation, are classified as Class II attainment areas, affording them protections through the Primary NAAQS (NDDH 2012).

Some states have adopted more stringent standards for criteria pollutants, or have chosen to adopt new standards for other pollutants. For instance, the NDDH has established a standard for hydrogen sulfide (H_2S) (NDDH 2012).

Criteria pollutants and their health effects include the following.

- Sulfur dioxide (SO_2) is a colorless gas with a strong, suffocating odor. SO_2 is produced by burning coal, fuel oil, and diesel fuel, and 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. SO_2 emissions are also a primary cause of acid rain and plant damage (EPA 2011a).

- Inhalable Particulate Matter (PM_{10} and $PM_{2.5}$) is a class of compounds that can lodge deep in the lungs, causing adverse health problems, depending on their size, concentration, and content. Based on extensive health studies, particulate matter is regulated under two classes. PM_{10} is the fraction of total particulate matter 10 microns or smaller, and $PM_{2.5}$ is two and a half microns or smaller. Inhalable 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 (EPA 2011a).

- Nitrogen dioxide (NO_2) is a reddish-brown gas with an irritating odor. Primary sources include motor vehicles, industrial facilities, and power plants. In the summer months, NO_2 is a major component of photochemical smog. NO_2 is an irritating gas that may constrict airways, especially of asthmatics, and increase the susceptibility to infection in the general population. NO_2 is also involved in ozone smog production (EPA 2011a).

- Ozone (O_3) 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 nitrogen oxides in the presence of sunlight. Health effects related to O_3 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. O_3 can persist for many days after formation and travel several hundred miles (EPA 2011a).

- 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 (EPA 2011a).

The Primary and Secondary NAAQS for criteria pollutants are shown in Table 4-1. NEPA assessments require analysis of both near-field and far-field as part of the cumulative effects of proposed projects on air quality. Therefore, the North Dakota Ambient Air Quality Standards are shown as well as federal standards.

North Dakota has separate state standards for SO_2 and H_2S that are different from the federal criteria standards. All other state criteria pollutant standards are the same as federal. In addition, the EPA averages data from monitoring stations within each county to determine the Air Quality Index (AQI), a general measure of air quality for residents of the county. An AQI greater than 100 is indicative of unhealthy air quality conditions for the county residents, although residents may experience greater or lesser risks depending on their proximity to the sources of pollutants (EPA 2011b).

Table 4-1. NAAQS and Other Air Quality Standards.

Pollutant	Averaging Period	Primary Standard (NAAQS)	Secondary Standard (National Parks)	North Dakota AAQS
SO_2 (parts per billion [ppb])	1-hour	75	-	273
	3-hour	500	500	-
	24-hour[1]	140	-	99
	Annual (Arithmetic Average)	30	-	23
PM_{10} (micrograms per cubic meter of air [$\mu g/m^3$])	24-hour[2]	150	-	150
	Expected annual mean	50	-	50
$PM_{2.5}$ ($\mu g/m^3$)	24-hour[3]	35	35	35
	Annual (Arithmetic Average)[4]	15	15	15
NO_2 (ppb)	1-hour[3]	100	-	-
	Annual mean	53	53	53
CO (parts per million [ppm])	1-hour[1]	35	-	35
	8-hour[1]	9	-	9
O_3 (ppb)	1-hour[5]	120	120	120
	8-hour[5]	75	75	-
Lead ($\mu g/m^3$)	Rolling 3-month average	0.15	0.15	1.5 (quarterly mean)
H_2S (ppm)	Instantaneous	-	-	10
	1-hour	-	-	0.20
	24-hour	-	-	0.10
	3-month	-	-	0.02

Sources: EPA 2011a; NDDH 2012.

[1] Not to be exceeded more than once per year.

[2] Not to be exceeded more than once per year on average over 3 years.

[3] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed standard.

[4] To attain this standard, the 3-year average of the weighted annual mean must not exceed the standard.

[5] To attain this standard, the 3-year average of the fourth-highest daily maximum must not exceed the standard.

4.2.2 Greenhouse Gas Emissions and Climate Change

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). Some GHGs such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHGs (e.g., fluorinated gases) are created and emitted solely through human activities. The EPA (2011c) identifies the principal GHGs that enter the atmosphere because of human activities as the following.

- Carbon Dioxide (CO_2): CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH_4): CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxide (N_2O): N_2O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- Fluorinated Gases: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are typically emitted in small quantities, but are potent GHGs thought to contribute significantly to global warming processes (EPA 2011b).

CO_2 is the primary GHG, responsible for approximately 90% of radiative forcing (the rate of energy change as measured at the top of the atmosphere; can be positive [warmer] or negative [cooler]) (EPA 2011b). To simplify discussion of the various GHGs, the term "Equivalent CO_2 or CO_2e" has been developed. CO_2e is the amount of CO_2 that would cause the same level of radiative forcing as a unit of one of the other GHGs. For example, one ton of CH_4 has a CO_2e of 22 tons; therefore, 22 tons of CO_2 would cause the same level of radiative forcing as one ton of CH_4. N_2O has a CO_2e value of 310. Thus, control strategies often focus on the gases with the highest CO_2e value.

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 (Intergovernmental Panel on Climate Change [IPCC] 2007).

Observational evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases. The IPCC Working Group I Fourth Assessment compiles and analyzes global data on climate change, and reports that warming of the climate system is evident from global observations of increases in average air and ocean temperatures, widespread melting of snow and ice, and rising average sea levels (IPCC 2007). World-wide, 11 of the 12 years between 1995 and

2007 ranked among the warmest years in the instrumental record of global surface temperature since 1850 (IPCC 2007). The National Oceanic and Atmospheric Agency monitored data indicate that 21 of the 30 years between 1979 and 2009 had above average temperatures in the contiguous United States, with departures from average temperatures occurring with increasing frequency, as shown in Figure 4-1 (National Oceanic and Atmospheric Agency 2010).

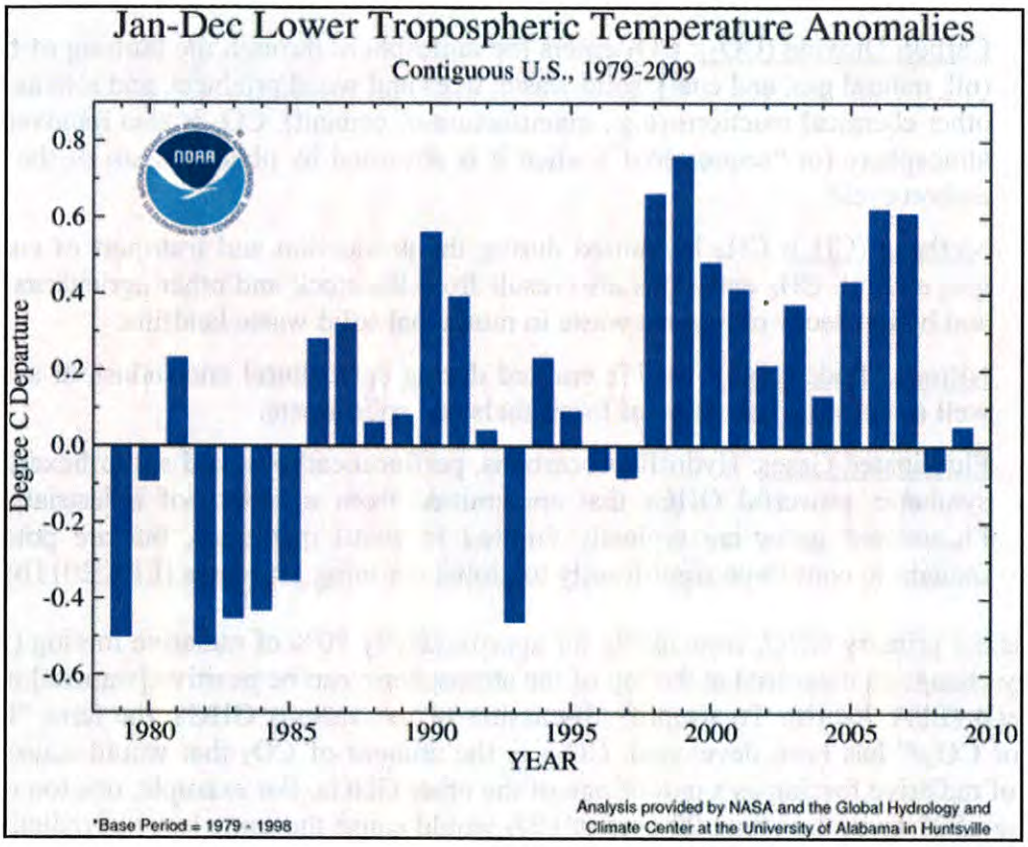


Figure 4-1. Temperature anomalies in the contiguous United States, 1979–2009.

Many physical and biological effects have been observed to correlate with trends in global warming. Sea levels are rising worldwide and along much of the United States coast (EPA 2011b). Tide gauge measurements and satellite altimetry suggest that sea levels have risen worldwide approximately 4.8 to 8.8 inches during the last century (IPCC 2007). A significant amount of sea level rise has likely resulted from the observed warming of the atmosphere and the oceans. Hydrological systems, ice pack, and permafrost are also affected by higher oceanic and atmospheric temperatures, affecting biological systems and agriculture (IPCC 2007).

IPCC experts concluded that most of the observed increase in globally averaged temperature since the mid-twentieth century is very likely due to the observed increase in anthropogenic GHG concentrations (IPCC 2007).

Therefore, the EPA collects data on and encourages limiting or reducing emissions of anthropogenic sources of GHGs to the earth's atmosphere (EPA 2011c). Many U.S. states

have adopted goals and actions to reduce GHGs. The EPA and the National Highway Traffic Safety Administration have increased corporate fuel economy standards to promote national energy security and reduce GHGs. Standards would equal 35 miles per gallon by 2020, with an estimated savings to drivers of $100 billion annually (EPA 2011c).

On May 13, 2010, the EPA issued a final rule that establishes thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration and title V Operating Permit programs are required for new and existing industrial facilities (EPA 2011c). This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities would be required to obtain Prevention of Significant Deterioration and title V permits. Facilities responsible for nearly 70% of the national GHG emissions from stationary sources would be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities. Emissions from small farms, restaurants, and all but the very largest commercial facilities are not covered by these programs at this time; however, the EPA recently initiated additional hearings to help determine the types of industries to be held to new standards under these federal permits (EPA 2011c).

Energy production and supply was estimated to emit up to 25.9% of GHGs world-wide in 2004 (Pew Center 2009). CH_4, with a high radiative forcing CO_2e ratio, is a common fugitive gas emission in oil and gas fields (EPA 2011b). Oil and gas production, however, is highly variable in potential GHG emissions. Oil and gas producers in the United States are not considered large GHG emitters by the EPA, and are not the subject of any current federal proposals that would regulate GHG emissions.

4.2.3 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 NDDH typically reviews projects and either requires an applicant to prepare a risk assessment or assign the state engineers to conduct the assessment. 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 one in one hundred thousand.

4.2.4 Existing Air Quality in the Project Area

Federal air quality standards apply in the project area, which is designated as a Class II attainment area. Although the State of North Dakota does not have jurisdiction over air quality matters on the Reservation and no air quality monitoring stations occur within the boundaries of the Reservation, monitoring efforts are being made by the state and industry in the area. 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, it is published on the Internet and available from EPA and NDDH (NDDH 2012).

Monitoring stations providing complete data near the project site include Theodore Roosevelt National Park North Unit (TRNP-NU) (Air Quality Station # 380530002) in McKenzie County, and Dunn Center (Air Quality Station # 38025003) in Dunn County. These stations are located west and southeast of the proposed well sites, respectively. Bear Paw Energy and Amerada Hess operate site-specific monitoring stations in the region. However, these stations do not provide complete data that would be applicable to this analysis (NDDH 2012).

Criteria pollutants measured at the two monitoring stations include SO_2, PM_{10}, NO_2, and O_3. Lead and CO are not monitored by the two stations. Table 4-2 summarizes the NAAQS and the maximum levels of criteria pollutants. The highest value at either of the two monitoring locations is shown for each year from 2007 through 2010.

All monitored criteria pollutants are well below federal and state standards measured at the monitoring stations for all years in the study period from 2007 through 2011. In addition to the low levels of monitored criteria pollutants, the EPA reports that Dunn and McKenzie Counties had zero days in which the AQI exceeded 100 in 2007 through 2011, indicating that general air quality does not pose an unhealthy condition for residents of this county (EPA 2012).

Table 4-2. Maximum Levels of Monitored Pollutants, 2007–2010, as Measured at Dunn Center and Theodore Roosevelt National Park North Unit Monitoring Stations.

Criteria Pollutant	Averaging Period	Primary Standard (NAAQS)	North Dakota AAQS	Maximum Reported Level from Dunn Center and TRNP-NU Monitoring Stations			
				2010	2009	2008	2007
SO_2 (parts per billion [ppb])	1-hour	75	273	25.8	20.3	20.9	22
	3-hour	500	-	16.3	13.0	13.0	10
	24-hour[1]	140	99	4.1	6.0	5.0	4
	Annual (Arithmetic Average)	30	23	0.7	0.6	0.5	1.1
PM_{10} (micrograms per cubic meter or air [$\mu g/m^3$])	24-hour[2]	150	150	32.0	54	108	57.4
	Expected annual mean	50	50	9.7	11.3	14.2	13.2
$PM_{2.5}$ ($\mu g/m^3$)	24-hour[3]	35	35	27.3	15.0	35.7	22.2

Criteria Pollutant	Averaging Period	Primary Standard (NAAQS)	North Dakota AAQS	Maximum Reported Level from Dunn Center and TRNP-NU Monitoring Stations			
				2010	2009	2008	2007
	Annual (Arithmetic Average)[4]	15	15	8.6	3.4	3.7	3.6
NO_2 (ppb)	1-hour[3]	100	-	24	15	24	26
	Annual mean	53	53	1.4	1.5	1.8	1.5
O_3 (ppb)	1-hour[5]	120	120	73	67	69	76
	8-hour[5]	75	-	70	58	63	71

Source: NDDH 2012.

[1] Not to be exceeded more than once per year.

[2] Not to be exceeded more than once per year on average over 3 years.

[3] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed standard.

[4] To attain this standard, the 3-year average of the weighted annual mean must not exceed the standard.

[5] To attain this standard, the 3-year average of the fourth-highest daily maximum must not exceed the standard.

4.2.5 Typical Project Emissions from Oilfield Development

According to EPA Emission Inventory Improvement documents (EPA 1999), oil field emissions encompass three primary areas: combustion, fugitive, and vented. Typical processes that occur during exploration and production include the following.

- Combustion emissions include SO_2, ozone precursors called volatile organic compounds (VOCs), GHGs, and HAPs. Sources include engine exhaust, dehydrators, and flaring (EPA 1999).
- Fugitive emissions include criteria pollutants, H_2S, VOCs, HAPs, and GHGs. Sources of fugitive emissions include mechanical leaks from well field equipment such as valves, flanges, and connectors that may occur in heater/treaters, separators, pipelines, wellheads, and pump stations. Pneumatic devices such as gas actuated pumps and pressure/level controllers also result in fugitive emissions. Other sources of fugitive emissions include evaporation ponds and pits, condensate tanks, storage tanks, and wind-blown dust (from truck and construction activity) (EPA 1999).
- Vented emissions include GHGs, VOCs, and HAPs. Primary sources are emergency pressure relief valves and dehydrator vents (EPA 1999).

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, wind-blown dust from disturbed areas and travel on dirt roads, evaporation from pits and sumps, and gas venting. Diesel emissions are being progressively controlled by the EPA in a nationwide program (EPA 2011c). 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.

4.2.6 Air Quality Best Management Practices

Under the CAA, 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 well's lifecycle. BMPs fall into the following six general categories.

- Transportation BMPs to reduce the amount of fugitive dust and vehicle emissions
  - Use directional drilling to drill multiple wells from a single well pad;
  - use centralized water storage and delivery, well fracturing, gathering systems;
  - use telemetry to remotely monitor and control production;
  - use water or dust suppressants to control fugitive dust on roads;
  - control road speeds; and
  - use van or carpooling.
- Drilling BMPs to reduce rig emissions
  - Use cleaner diesel (Tier 2, 3, and 4) engines;
  - use natural gas-powered engines; and
  - use "green" completions to recapture product that otherwise would have been vented or flared.
- Unplanned or emergency releases
  - Use high-temperature flaring if gas is not recoverable.
- Vapor recovery
  - Use enclosed tanks instead of open pits to reduce fugitive VOC emissions; and
  - use vapor recovery units on storage tanks.
- Inspection and maintenance
  - Use and maintain proper hatches, seals, and valves;
  - optimize glycol circulation and install a flash tank separator;
  - use selective catalytic reduction; and
  - replace high-bleed with low-bleed devices on pneumatic pumps.
- Monitoring and repair
  - Use directed inspection and maintenance methods to identify and cost-effectively fix fugitive gas leaks; and
  - install an air quality monitoring station.

4.2.7 Potential Air Quality Impacts

Based on the existing air quality of the region, typical air levels and types of emissions from similar oil field projects, and WPX's commitment to implementation of BMPs identified in Section 4.2.6, the Proposed Action would not produce significant increases in criteria pollutants, GHGs, or HAPs. The Proposed Action would incrementally contribute to emissions occurring within the region. In general, however, the increase in emissions

associated with the Proposed Action would occur predominantly during construction and drilling operations and therefore would be localized, largely temporary, and limited in comparison with regional emissions. Since the AQI is exceptionally low in the cumulative impact analysis area (CIAA), and the expected future development would be widely dispersed in time and space, the Proposed Action is not expected to impact attainment status based on any of the Primary and Secondary NAAQS for criteria pollutants or other regulated air emissions. Contribution of the proposal to incremental increases of unregulated GHG emissions is expected to be minor.

4.2.8 Federal Implementation Plan

On August 1, 2012, Lisa Jackson, the EPA Administrator, signed the approval and promulgation of the Federal Implementation Plan (FIP) for oil and gas well production facilities on the Fort Berthold Reservation. The Reservation-specific FIP regulates emissions from oil and gas production facilities producing in the Bakken Pool that was constructed and operating on or after August 12, 2007. The Interim Final Rule (IFR) became effective on August 3, 2012, and compliance with the IFR is required no later than 90 days after publication in the Federal Register.

The FIP will be a permit by rule with the emission control requirements clearly defined as requiring the owner or operator to reduce the mass content of VOC emissions from natural gas during oil and natural gas production and storage operations by at least 90.0 percent on the first date of production. Within ninety (90) days of the first date of production, it is required that the owner or operator route the natural gas from the production and storage operations through a closed-vent system to a utility flare or equivalent combustion device capable of reducing the mass content of VOC in the natural gas vented to the device by at least 98.0 percent.

4.3 WATER RESOURCES

This section identifies the existing water resources within the project area and potential effects of the Proposed Action. Specific subjects discussed in this section include surface water and surface water quality, groundwater resources, and the potential short-term and long-term impacts of the Proposed Action on these water resources.

4.3.1 Surface Water

The surface water resources in the project area would be managed and protected according to existing federal laws and policies regarding the use, storage, and disposal of the resource during the construction and operation of the project. Surface water resource use and protection is administered under the following federal laws:

- Clean Water Act of 1972, as amended (33 USC 1251 et seq.)
- Federal Land Policy and Management Act of 1976 (43 USC 1711–1712)
- National Environmental Policy Act of 1972 (42 USC 4321)
- Safe Drinking Water Act of 1974, as amended (42 USC 300 et seq.)

Water quality is protected under the Federal Water Pollution Control Act (as amended), otherwise known as the Clean Water Act (CWA). The CWA has developed rules for regulating discharges of pollutants into waters of the U.S. and also regulates water quality standards for surface waters. The CWA has also made it unlawful to discharge any pollutant from a point source into any navigable waters of the U.S., unless a permit has been obtained from the National Pollution Discharge Elimination System program.

The Environmental Division of the MHA Nation has had an application pending with the EPA since 1996 for delegation of authority to set federally approved water quality standards on the Reservation. In the absence of tribal surface water quality authorities, enforcement of federal environmental laws regarding surface water on the Reservation is accomplished through permitting, inspection, and monitoring activities of the National Pollution Discharge Elimination System program, as administered by the EPA.

The proposed WPX well pad and utility corridor would occur within the Upper Squaw Creek (Hydrologic Unit Code [HUC] 101102050607) sub-watershed, the Waterchief Bay (HUC 1011020506) watershed, and the Lower Little Missouri River (HUC 10110205) drainage basin (Figure 3-1).

Runoff from the proposed well pad would flow approximately 23.7 miles southeast, at its closest, until reaching perennial waters in Lake Sakakawea. See Section 4.12, Mitigation and Monitoring, for further details. West of the proposed access road is a semi-permanent freshwater pond. Care would be taken to reduce unintentional surface runoff by avoiding impact to the wetlands associated with the pond and natural runoff would not be impeded due to the installation of culverts in the low crossing areas.

The Proposed Action would be engineered and constructed to minimize the suspended solid (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.

4.3.2 Groundwater

Aquifers in the project area include, from deepest to shallowest, the Cretaceous Fox Hills and Hell Creek formations and the Tertiary Ludlow, Tongue River, and Sentinel Butte formations (Table 4-3). Several shallow aquifers related to post-glacial outwash composed of till, silt, sand, and gravel are located in McKenzie County. However, none are within the proposed project area.

The shallow Sentinel Butte Formation is commonly used for domestic supply in the area, and outcrops in McKenzie County. This aquifer meets standards of the NDDH (Croft 1985). Detailed analyses are available from the North Dakota Geological Survey, Bulletin 68, Part Ill, 1976.

Review of electronic records of the North Dakota State Water Commission (2012) revealed 17 existing water wells within 5 miles of the proposed well pad (Table 4-4). All of the wells are used for an unknown purpose. Two water wells are approximately 1.0 mile from the proposed well pad.

The identified groundwater wells may have minimal hydrologic connections due to the depths at which these wells are being drilled. 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 to permanently seal the well shaft from any surrounding aquifers. Drilling would proceed in compliance with Onshore Oil and Gas Order No. 2, Drilling Operations (43 CFR 3160).

Table 4-3. 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	Silt, clay, sand, and lignite	5 to 100 gal/min in sandstone. 1 to 200 gal/min in lignite.
		Tongue River	140–750	350–490	Silt, 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.

Sources: Croft 1985; Klausing 1979.
gal/min = gallons per minute

Table 4-4. Existing Water Wells within 5 Miles of the Proposed Myrtle Old Dog #24H Well Pad.

Water Well Number	Section	Township/ Range	Type	Depth (feet)	Aquifer	Miles to Proposed Well Pad
Unknown	6	148N/94W	Unknown	0	Sentinel Butte - Tongue River	4.2
Unknown	5	149N/93W	Unknown	0	Sentinel Butte - Tongue River	2.9
Unknown	8	149N/93W	Unknown	0	Sentinel Butte - Tongue River	2.6
Unknown	9	149N/93W	Unknown	0	Sentinel Butte - Tongue River	3.2
Unknown	21	149N/93W	Unknown	0	Sentinel Butte - Tongue River	3.7
Unknown	21	149N/93W	Unknown	0	Surface Water	3.6
Unknown	27	149N/93W	Unknown	0	Surface Water	4.7
Unknown	31	150N/93W	Unknown	0	Sentinel Butte - Tongue River	3.8
Unknown	33	150N/93W	Unknown	0	Sentinel Butte - Tongue River	4.7
Unknown	14	149N/94W	Unknown	0	Sentinel Butte - Tongue River	1.0
Unknown	14	149N/94W	Unknown	1750	Fox Hills	1.0
Unknown	28	149N/94W	Unknown	320	Tongue River	2.5
Unknown	28	149N/94W	Unknown	120	Sentinel Butte - Tongue River	2.5
Unknown	27	149N/94W	Unknown	36	Undefined	2.7
11351	22	149N/94W	Unknown	140	No Obs Well Installed	2.0
11352	21	149N/94W	Unknown	240	Undefined	2.2
11353	22	149N/94W	Unknown	80	No Obs Well Installed	2.1

4.3.2.1 Hydraulic Fracturing Process

HF is a well stimulation process used in North Dakota's Bakken/Three Forks Formation to maximize the extraction of oil and gas. The process enhances subsurface fracture systems, allowing oil to move more freely through porous rock to production wells that bring the oil or gas to the surface (EPA 2010). During HF, fluids, commonly made up of water and chemical additives, are pumped down the well bore into these target formations at high pressure. The HF process uses large volumes of water under high pressure to fracture rock within the target formation to increase formation porosity and allow the flow of petroleum from the rock. Depending upon the characteristics of the well and the rock being fractured, a few million gallons of water can be required to complete a job (Arthur et al. 2008).

Only specific sections of the well within the target formation receive the full force of pumping. As pressure builds up in this portion of the well, water opens fractures, and the driving pressure extends the fractures deep into the rock unit. When pumping stops, these fractures quickly snap closed and the water used to open them is pushed back into the borehole, back up the well and is collected at the surface. The water returned to the surface is comprised of injected water mixed with the pore water that has been trapped in the rock unit for millions of years. The pore water is usually a brine with significant amounts of dissolved solids (Arthur et al. 2008).

When the pressure exceeds the rock strength, the fluids open or enlarge fractures that can extend several hundred feet from the well shaft, which is oriented laterally within the target formation. After the fractures are created, a propping agent is pumped into the fractures to keep them from closing when the pumping pressure is released. After HF is completed, the internal pressure of the geologic formation causes the injected HF fluids to rise to the surface where they are stored in disposal tanks (EPA 2010).

Proppants are small compression-resistant particles added to the HF fluids to assist in holding the fractures open and creating pore space through which petroleum can flow. Sand was the original proppant but now aluminum beads, ceramic beads, sintered aluminum (i.e., bauxite), and other materials are being used in the wells. Over one million pounds of proppants can be used while HF a single well (Arthur et al. 2008).

In addition to proppants, a variety of chemical additives are included with the water used in HF. Some chemicals are used to thicken the water into a gel that is more effective at opening fractures and carrying proppants deep into the rock unit. Other chemicals are added to reduce friction, keep rock debris suspended in the liquid, prevent corrosion of equipment, kill bacteria, control pH, and other functions (Arthur et al. 2008). Typical chemical additives used in the HF fluids are listed in Table 4-5.

Table 4-5. Common Additives of Hydraulic Fracturing Fluid.

Additive Type	Main Compound	Common Use of Main Compound
Acid	Hydrochloric acid or muriatic acid	Swimming pool chemical and cleaner
Biocide	Glutaraldehyde	Cold sterilant in health care industry
Breaker	Sodium chloride	Food preservative
Corrosion inhibitor	N,n-dimethyl formamide	Used as a crystallization medium in pharmaceutical industry
Friction reducer	Petroleum distillate	Cosmetics including hair, make-up, nail, and skin products
Gel	Guar gum or hydroxyethyl cellulose	Thickener used in cosmetics, sauces, and salad dressings
Iron control	2-hydroxy-1,2,3-propanetricaboxylic acid	Citric acid is used to remove lime deposits; lemon juice ~7% citric acid
Oxygen scavenger	Ammonium bisulfite	Used in cosmetics
Proppant	Silica, quartz sand	Play sand
Scale inhibitor	Ethylene glycol	Automotive antifreeze and de-icing agent

Source: Arthur et al. 2008.

4.3.3 Potential Impacts to Surface Water and Groundwater Resources

The proposed project area does not lie within the boundaries of the post-glacial outwash aquifers, so 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.

Water quality of future wells in the vicinity 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 to permanently seal the well shaft from any surrounding aquifers. Surface casing would be employed to a depth of 2,500 feet below ground surface to isolate and protect all near-surface aquifers from contamination during drilling, as described in Section 3.2.6 of this document, and to protect the potable water aquifers from any potential contamination during the drilling and operations phases.

Since the introduction of technological advances in HF, some environmental concerns have been published related to the use of chemical additives and their potential effect on groundwater resources. These concerns, reviewed in Arthur et al. (2008), include the following.

1. Fractures produced in the well might extend directly into shallow rock units that are used for drinking water supplies, or fractures produced in the well might communicate with natural fractures that extend into shallow rock units that are used for drinking water supplies.
2. The casing of a well might fail and allow fluids to escape into shallow rock units used for drinking water supplies.
3. Accidental spills of HF fluids or fluids expelled during HF might seep into the ground or contaminate surface water.

The EPA has studied the effects of coalbed methane well fracturing, publishing the results in a report entitled *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs* (EPA 816-R-04-003) in 2004 (EPA 2004). The report has received both internal and external peer review, and public comment on its research design and incident information. Based on its research, the EPA concluded that there was negligible risk of HF fluid contaminating underground sources of drinking water during HF of coalbed methane production wells, which are significantly shallower than the Bakken/Three Forks Formation. However, the EPA continues to monitor the effects of HF in coalbed methane well completion (EPA 2004). The EPA is currently undertaking a study to evaluate the effect of oilfield HF technology, processes, and fluids on potable water aquifers. The EPA study is expected to be completed in 2012 (EPA 2010).

Oil-bearing formations typically occur much deeper than potable water aquifers; approximately 8,700 feet of intervening rock formations occur between the Bakken/Three Forks Formation and the deepest groundwater wells within 1 mile of the proposed wells. In addition, the unique geological position of the Bakken/Three Forks Formation places it immediately beneath the Madison Group (Figure 4-2). The Madison group of Mississippian

age includes three geological formations that have properties that greatly limit the possibility of HF fractures extending vertically into shallower geological formations containing potable water. The following characteristics of the three members of the Madison Group show extremely high resistance to fracturing or vertical transmission of fluids.

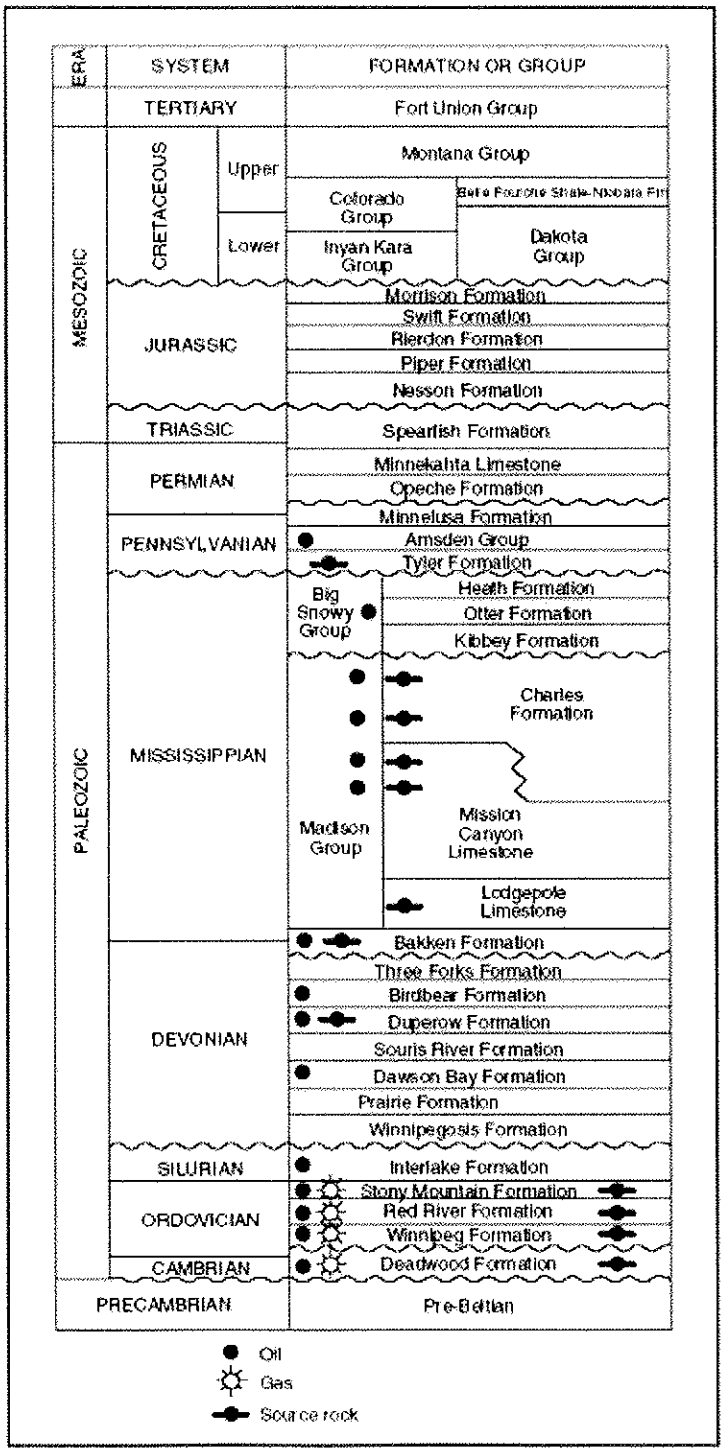


Figure 4-2. Typical stratigraphic column of the Williston Basin, with oil and gas bearing formations (Peterson 1995).

4.3.3.1 Lodgepole Limestone Sequence

This is a sequence of primarily Mississippian limestone, with scattered interbedded shales approximately 900 feet thick. It lies immediately above the Bakken/Three Forks Formation. This sequence of rocks is characterized as hard and very dense, requiring significant pressure to initiate fractures (Energy Information Administration 2006).

4.3.3.2 Mission Canyon Limestone

Like the Lodgepole Limestone, the Mission Canyon is a dense limestone formation with very low porosity that ranges from 500 to 800 feet thick. Any HF pressures within the Bakken/Three Forks Formation that might be sufficient to initiate fracturing of the Lodgepole Limestone are assumed to be greatly reduced before reaching the Mission Canyon Limestone Formation, and very unlikely to cause any fracturing or transmission of fluids.

4.3.3.3 Charles Salt

The Charles Salt is ubiquitous throughout a great portion of the Williston Basin in both Montana and North Dakota and lies immediately above the limestone described above. This salt formation is approximately 600 feet thick. At the depth below the surface and the associated pressures, this salt is ductile, and would flow slowly to fill any void created by drilling or other pressure. This "flow characteristic," although very challenging to well drilling, would serve to seal any potential fracture that might be propagated artificially through HF. The salt would flow completely around the HF fluids or proppant, thereby eliminating any opportunity for the artificially induced fracture to stay open. Further, the water from the Bakken/Three Forks Formation is almost fully salt-saturated; even with water flow from the formation to the Charles Salt Formation, there could be almost no dissolution to enhance any fracture, and the formation would form a barrier, or cap, for any potential HR fracture.

Above the Charles Salt lies greater than 6,000 feet of limestone, siltstone, interbedded salt, sandstone, and shale, which tend to be soft and incompetent, providing a serious impediment to any fracture height growth and redirecting and attenuating any fracture that is started. The multiple layers encountered would also serve to dissipate any energy from a fracture stimulation resulting in very limited fracture competency.

Potable water aquifers lie approximately 4,000 feet above the Bakken/Three Forks Formation. In general, almost any of the intervening rock packages appear to be able to independently act as an effective impediment to fracture growth in a vertical direction. Although large volumes of sand (proppant) are used in the modern, multiple-stage fracture stimulations, relatively small amounts of proppant are used per stage and are specifically designed to limit fracture growth. This technology is highly unlikely to result in fractures that could expand through the Madison Group limestone or reach the Charles Salt Formation.

No direct or indirect impacts to surface water or groundwater resources are anticipated from drilling of the proposed wells, HF completions, or operation of the proposed wells due to the following.

- The geological setting of the Bakken/Three Forks Formation with extremely tight capping formations of the Madison Unit forming an impermeable barrier to upward fracturing or fluid movement.
- The use of closed-loop drilling without a cuttings pit, construction BMPs, and spill prevention planning during the construction phase of the project.
- Implementation of site-specific measures to reduce long-term erosion and runoff into nearby streams and Lake Sakakawea.
- The use of protective casings on the well shafts to protect shallow water-bearing rock formations during drilling and operation of the oil wells.

Several groundwater protective measures have been included in the drilling and production procedures, such as 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. The intent of the Proposed Action is to minimize the risks associated with saltwater and hydrocarbon pollution. Based on the location, design, and the drilling methods that would be used on the proposed well pad, no significant adverse impacts to surface water or groundwater resources are anticipated from the Proposed Action.

4.4 SOILS

The project area is 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 sediment is of Recent, Pleistocene, or Tertiary age, and includes Sauk, Tippecanoe, Kaskaskia, Absaroka, Zuni, and Tejas Sequences.

4.4.1 Natural Resources Conservation Service Soil Data

The Natural Resources Conservation Service (NRCS 2012) soil series present within the well pad and utility corridor locations, and their respective acreages, are illustrated in Figure 4-3 and listed in Table 4-6. The acreage shown in Table 4-6 is based on the spatial extent of soil series combinations derived from NRCS data; therefore, the acreage is approximate and used as a best estimate of soil series distribution within the proposed project area.

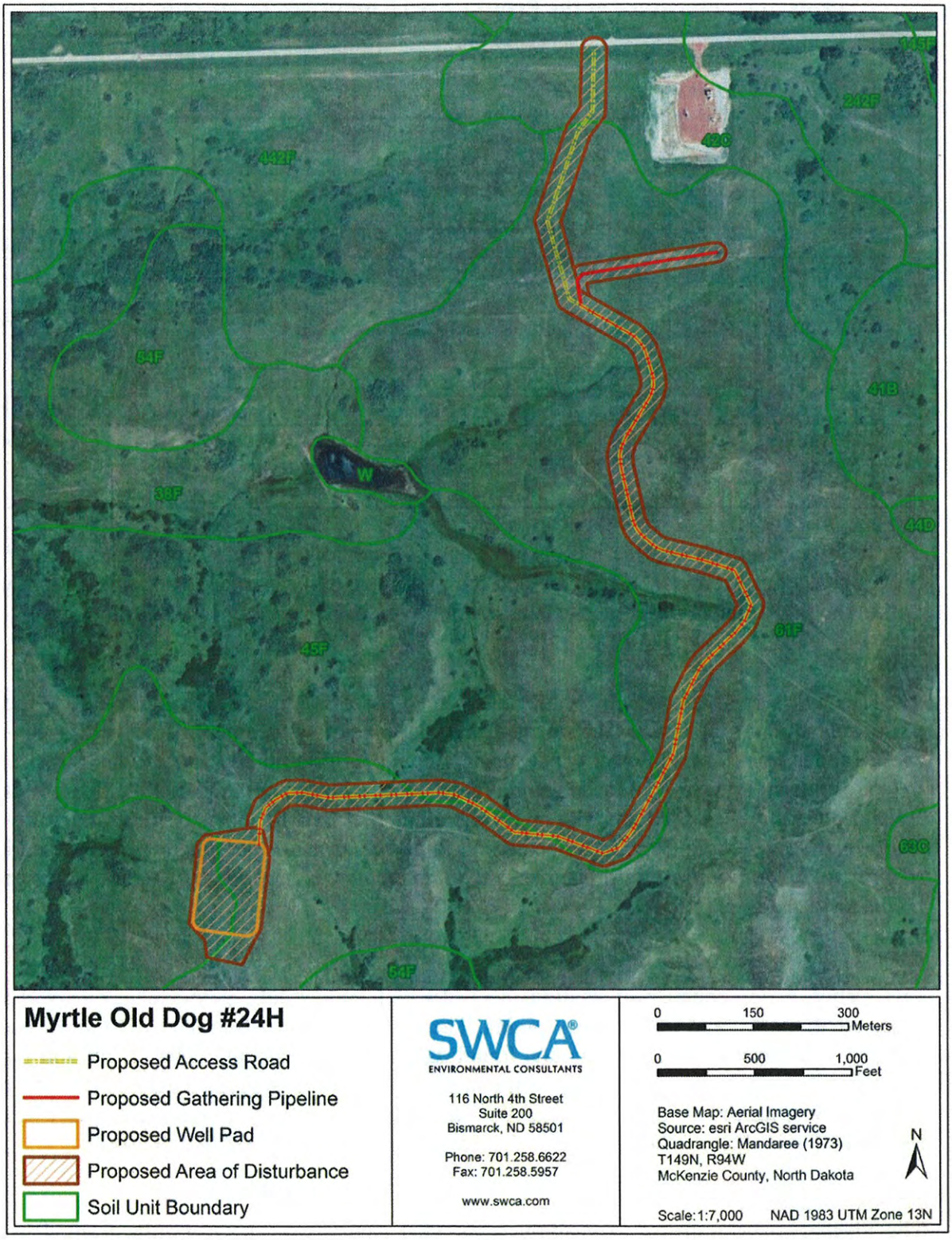


Figure 4-3. Approximate spatial extent of soil types within and around the proposed Myrtle Old Dog #24H well pad.

Table 4-6. Percentage of the Project Area Comprised of Specific Soil Types.

Feature	Map Unit	Soil Series	Acres	Percent of Location
Well Pad	61F	Beisigl-Flasher-Tally complex, 9 to 50 percent slopes	3.06	58.43
	45F	Zahl-Cabba-Maschetah complex, 3 to 70 percent slopes	2.18	41.57
		Total	5.24	100.00
Access Road/ Utility Corridor	61F	Beisigl-Flasher-Tally complex, 9 to 50 percent slopes	16.62	78.13
	45F	Zahl-Cabba-Maschetah complex, 3 to 70 percent slopes	3.32	15.62
	42C	Williams loam, 6 to 9 percent slopes	1.33	6.25
		Total	21.27	100.00
Gathering Pipeline Corridor	61F	Beisigl-Flasher-Tally complex, 9 to 50 percent slopes	1.82	100.00

The following soil series descriptions represent individual soil series reported to exist within the proposed project area (NRCS 2012). Each individual soil series does not exist individually within the project area, but rather in combination with other soil types (see Table 4-6).

4.4.1.1 Beisigl

The Beisigl series consists of moderately deep, somewhat excessively drained, rapidly permeable soils on uplands. They formed in sandy materials weathered from soft sandstone. Slope ranges from 0 to 50 percent. The mean annual precipitation found throughout the spatial extent of this soil type is 15 inches and the mean annual air temperature is 43°F. Most areas of Beisigl soils are used for native range. Some areas are used for hay, pasture, and cultivated crops. Native vegetation includes needle and thread (*Hesperostipa comata*), prairie sandreed (*Calamovilfa longifolia*), little bluestem (*Schizachyrium scoparium*), and blue grama (*Bouteloua gracilis*) (NRCS 2012).

4.4.1.2 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 percent. 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 (*Nasella viridula*), and other various herbs, forbs, and shrub species (NRCS 2012).

4.4.1.3 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 percent. The mean annual precipitation found throughout the spatial extent of this soil type is

about 14 inches and mean annual temperature is about 42°F. These soils are used mainly for range and pasture. Native vegetation is prairie sandreed, blue grama, little bluestem, upland sedges (*Carex* sp.), some creeping juniper (*Juniperus horizontalis*), and other shrubs (NRCS 2012).

4.4.1.4 Maschetah

The Maschetah series consists of very deep, well-drained soils found on sedimentary plains and hills. Slopes range from approximately 0 to 45 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 17 inches and mean annual air temperature is approximately 43°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 (*Pascopyrum smithii*), blue grama, green needlegrass, and fringed sagewort (*Artemisia frigida*) (NRCS 2012).

4.4.1.5 Tally

The Tally series consists of very deep; well-drained soils that formed in material derived from eolian deposits, alluvium, or glaciofluvial deposits. These soils are on stream terraces, alluvial fans, till plains, drainageways, hills, sedimentary plains, and outwash plains. Slopes are 0 to 45 percent. The mean annual precipitation found throughout the spatial extent of this soil type is about 15 inches, and mean annual temperature is about 43°F. Potential native vegetation is mainly western wheatgrass, needle and thread, prairie Junegrass (*Koeleria macrantha*), prairie sandreed, forbs, and shrubs (NRCS 2012).

4.4.1.6 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 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches and mean annual air temperature is approximately 42°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 2012).

4.4.1.7 Zahl

The Zahl series consists of very deep, slowly permeable, well-drained soils found on glacial till plains, moraines, and valley side slopes at approximately 1 to 60 percent. 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 2012).

4.4.2 Potential Impacts from Soil Erosion

Precautions would be taken during construction activities to prevent erosion. Proven BMPs are known to significantly reduce erosion of various types of soil, including those in the project area (BLM Instruction Memorandum 2004-124, www.blm.gov/bmp; BLM and USFS 2007; Grah 1997).

The soil types are not expected to create unmanageable erosion issues or interfere with reclamation of the area. Topsoil stripped from areas of new construction would be retained for use during reclamation. Any areas stripped of vegetation during construction would be seeded once construction activities have ceased. The implementation of BMPs (Section 4.12) by the operator would reduce project effects and maintain negligible levels of erosion; therefore, no significant adverse impacts to soil resources are anticipated.

The proposed well pad is dominated by soils found within 9 to 50 percent slopes. Care would be taken during construction to minimize soil erosion impacts. The soil types found at the well pad location have variable run-off depending on the slope, which ranges between 3 and 70 percent (NRCS 2012). Reclamation of vegetative communities should be obtainable due to the affinity of native grassland species to the soil types present (NRCS 2012). The sites would be monitored during and after construction and BMPs (Section 4.12) would be used to prevent erosion, minimize runoff and loss of sediment, and ensure soil stabilization.

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 approximately 1.4 miles of new and improved roads in the CIAA, adding incrementally to existing and future impacts to soil resources, dust deposition, and erosion processes. New well field developments would be speculative until APDs are submitted to the BLM and BIA for approval. Additional wells are likely to be drilled in the same general area as the Proposed Action, using many of the same main access roads and minimizing the disturbance as much as possible.

WPX is committed to using BMPs to mitigate the potential effects of erosion. 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 alongside slopes, and planting cover crops to stabilize soil following construction and before permanent seeding takes place. Additional information regarding BMPs is provided in Section 4.12, Mitigation and Monitoring.

WPX commits to installing a 24-inch synthetically enhanced berm along the outer edges of the well pad, in addition to secondary containment (topsoil stockpile) that would be placed at the tops of drainages to prevent runoff. Straw waddles and matting, or hydroseeding on all fill slopes would be used to prevent erosion, and corners would be rounded as needed.

4.5 WETLANDS

Figure 3-1 illustrates the surface water runoff direction for the proposed well pad. The nearest perennial waterbody is Lake Sakakawea, approximately 23.7 river miles southeast of the project area. WPX has committed to using a pit-less closed-loop drilling system due to the proximity of the well pad to Lake Sakakawea and as a general construction standard. WPX would also take precautions to maintain influential runoff by constructing and maintaining a 24-inch-high synthetically enhanced berm surrounding the perimeter of the well pad.

National Wetland Inventory maps maintained by the U.S. Fish and Wildlife Service (USFWS) identify a wetland approximately 0.4 mile north of the proposed location, in addition to Lake Sakakawea, approximately 4.2 straight line miles east-northeast of the proposed well pad

location (USFWS 2009). SWCA identified two palustrine emergent wetlands, which were adequately avoided, within the survey boundary of the proposed utility corridor for the Myrtle Old Dog #24H well pad. Any wetlands observed along the proposed utility corridor or near the proposed well pad were avoided during the on-site meetings with the BIA. No wetlands or other special aquatic sites would be impacted by construction.

4.6 VEGETATION AND NOXIOUS WEEDS

4.6.1 Vegetation Data

The proposed project area occurs in the northwestern Great Plains ecoregion (River Breaks) (U.S. Geological Survey 2010), which is a western mixed-grass and short-grass prairie ecosystem (Bryce et al. 1998). Native grasses include big bluestem (*Andropogon gerardii*), little bluestem, blue grama, and western wheatgrass. 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 Juniper (*Juniperus* spp.), silver buffaloberry (*Shepherdia argentea*), and western snowberry (*Symphoricarpos occidentalis*). Vegetation noted at the project area includes prairie sagewort (*Artemisia frigida*), western snowberry, little bluestem, and needle and thread (Figure 4-4).

Figure 4-4. Vegetation at the Myrtle Old Dog #24H project area. Photo taken June 19, 2012.

4.6.2 Noxious Weeds

"Noxious weeds" 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 have high reproduction 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.

Noxious weeds have the potential to detrimentally affect public health, ecological stability, and agricultural practices. North Dakota Century Code Chapter 63-01.1 and the North Dakota

Department of Agriculture (NDDA) recognize 11 species as noxious, as shown in Table 4-7 (NDDA 2009). Each county has the authority to add additional species to their list of noxious weeds. In 2009, seven state noxious weed species were found on 62,222 acres in McKenzie County (Table 4-7).

Table 4-7. Recognized State Noxious Weed Occupied Area in McKenzie County, North Dakota.

Common Name	Scientific Name	McKenzie County (acres)
absinth wormwood	*Artemisia absinthium*	15
Canada thistle	*Cirsium arvense*	33,600
diffuse knapweed	*Centaurea diffusa*	1
leafy spurge	*Euphorbia esula*	26,200
musk thistle	*Carduus nutans*	0
purple loosestrife	*Lythrum salicaria*	0
Russian knapweed	*Acroptilon repens*	0
spotted knapweed	*Centaurea stoebe*	5
yellow toadflax	*Linaria vulgaris*	0
dalmatian toadflax	*Linaria dalmatica*	1
salt cedar	*Tamarix ramosissima*	2,400

Efforts to reduce the spread of noxious weeds would be made during the project construction and maintenance processes. The following guidelines would be followed during construction, reclamation, and maintenance stages of the project to control the spread of noxious weeds.

- Construction equipment, materials, and vehicles would be stored at construction sites or at specified construction yards.
- All personal vehicles, sanitary facilities, and staging areas would be confined to a limited number of specified locations to decrease chances of incidental disturbance and spread of weeds.
- In areas with existing noxious weed infestations, vegetation, soils, and trench spoil material would be stockpiled adjacent to the removal point and, following construction, would be returned to its original locations to prevent spreading.
- Prompt re-establishment of the desired vegetation in disturbed areas is required. Seeding would occur during the frost-free periods after construction. Certified "noxious weed-free" seed would be used on all areas to be seeded.

4.6.3 Potential Impacts on Vegetation and Noxious Weeds

The Proposed Action would result in the loss of approximately 28.09 acres of grassland vegetation and some improved livestock pasture vegetation. In addition to the removal of typical mixed-grasses, removal of existing vegetation may facilitate the spread of noxious weeds. The APD and this EA require the operator to control noxious weeds throughout

project area. If a noxious weed community is found, it would be eradicated unless the community is too large, in which case it would be controlled or contained to prevent further growth. The services of a qualified weed control contractor would be utilized.

Surface disturbance and vehicular traffic must not take place outside approved ROWs for the well pad, access road, and utility corridor. Areas that are stripped of topsoil must be 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 would reduce the potential establishment of invasive vegetation species. The loss of acres, with implementation of BMPs (Section 4.12) and noxious weed management guidelines would result in negligible levels of vegetation disturbance and would not result in significant adverse impacts to vegetation resources.

In addition, vegetation resources across the project area could be affected by foreseeable future energy development and surface disturbance in the CIAA. Continued oil and gas development within the CIAA could result in the loss, and further fragmentation, of mixed-grass prairie habitat. Incremental impacts to quality native prairie may occur in the future from vegetation clearing and soil disturbance, soil loss, compaction, and increased encroachment of unmanaged invasive weed species. 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 certain listed species known to use mixed-grass prairie habitats. Such impacts could be partially offset by avoidance of previously undisturbed prairie habitats, as well as implementation of soil and vegetation mitigation measures and BMPs (Section 4.12). Cumulative impacts to vegetation and other biological resources are therefore expected to be minor.

4.7 WILDLIFE

4.7.1 General Wildlife Species Occurrence and Habitat

Small migratory birds were the only wildlife observed during the field visits. No habitat for eagles or threatened and endangered species was observed. Cumulatively, the potential impacts on various species and their habitats are minimal. Currently, no adverse impacts have been identified for either the Reservation or the adjacent areas.

4.7.2 Potential Impacts to Wildlife

No impacts to listed species are anticipated because of the low likelihood of their occurrence within the proposed project area, confirmed by on-site assessments conducted by SWCA biologists. WPX has committed to using a closed-loop drilling system. For additional information on general BMPs and other operator-committed measures, please see Sections 3.2.3, Well Pad, and 4.12, Mitigation and Monitoring.

Minor impacts to unlisted wildlife species and their habitats could result from the construction of the well pad and utility corridor; increased vehicular traffic density; drilling activities; and long-term disturbances during commercial production. Ground clearing may impact habitat for small birds, small mammals, and other wildlife species. The Proposed Action 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) (MBTA). Fragmentation of native prairie habitat can detrimentally affect grouse species; however, due to the ratio of the project area to the total landscape area, the overall disturbance would be negligible.

4.7.3 Threatened and Endangered Species Occurrence and Habitat

Several wildlife species that may exist in McKenzie County (USFWS 2010) are listed as threatened or endangered under the Endangered Species Act (ESA) (16 USC 1531 et seq.). According to the USFWS, listed species in McKenzie County, North Dakota, include the gray wolf (*Canis lupus*), black-footed ferret (*Mustela nigripes*), whooping crane (*Grus americana*), piping plover (*Charadrius melodus*) and its Designated Critical Habitat, interior least tern (*Sterna antillarum*), and pallid sturgeon (*Scaphirhynchus albus*), as well as two federal candidate species, the Dakota skipper (*Hesperia dacotae*) and the Sprague's pipit (*Anthus spragueii*). In addition to the ESA, the Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668–668d, 54 Sta. 250) and the MBTA protect nesting migratory bird species. The listed species and their federal status are provided in Table 4-8 and discussed in detail in Appendix B. SWCA biologists did not observe any of these species or their habitats within the project area during surveys.

Several precautions that may limit or reduce the possible impact to all wildlife species at the proposed well pad location include:

- locating the well pad over areas with existing disturbances
- using pit-less, closed loop drilling systems;
- 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.

Table 4-8. Summary of Potential Effects to Threatened and Endangered Species.

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Black-footed Ferret (*Mustela nigripes*)	Endangered	Species is presumed extirpated from North Dakota.	None	No Effect
Gray Wolf (*Canis lupus*)	Endangered	Nearest known gray wolf populations exist in Minnesota, Canada, Montana, and Wyoming. Western North Dakota sightings in the late twentieth century are speculated to be solitary, transient, young adult males seeking to establish territory.	None	No Effect
Whooping Crane (*Grus americana*)	Endangered	Possible suitable foraging and roosting habitat is present within 1.0 mile of the proposed project location.	WPX would construct all electric and fiber optic utility lines underground. Drilling or construction activity would cease and the Bureau of Indian Affairs (BIA) and U.S. Fish and Wildlife Service (USFWS) would be notified if whooping cranes are sighted within 1 mile of the project area. Activities may commence when the bird(s) has left the 1-mile buffer area.	May Affect, Is Not Likely to Adversely Affect

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Piping Plover (*Charadrius melodus*)	Threatened	The nearest possible suitable nesting and foraging habitat occurs on the shoreline and islands of Lake Sakakawea, a minimum of approximately 23.7 river miles and 4.2 straight line miles from the proposed well pad and utility corridor. Piping plover may transition through the project areas.	WPX would use a closed-loop drilling system and surround the proposed well pad with a 24-inch synthetically enhanced containment berm. In addition, a metal berm, designed to hold 110% of the largest tank plus one full day's production, would surround the tank batteries to prevent hazardous runoff or spills. Straw rolls and matting would be placed on all high slope areas and fill would be positioned to serve as secondary containment to block the tops of drainages to prevent contaminant movement off site.	May Affect, Is Not Likely to Adversely Affect
Designated Critical Habitat for Piping Plover	Designated Critical Habitat	Critical Habitat occurs within the watershed of the project areas, on the shoreline and islands of Lake Sakakawea, a minimum of approximately 23.7 river miles from the proposed well pad and utility corridor.	See Piping Plover protection measures	May Affect, Is Not Likely to Adversely Affect
Interior Least Tern (*Sterna antillarum*)	Endangered	The nearest possible suitable nesting and foraging habitat occurs on the shoreline and islands of Lake Sakakawea, a minimum of approximately 23.7 river miles and 4.2 straight line miles from the proposed well pad and utility corridor. Migrating or foraging interior least terns may transition through the project area.	See Piping Plover protection measures	May Affect, Is Not Likely to Adversely Affect

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Pallid Sturgeon (*Scaphirhynchus albus*)	Threatened	Lake Sakakawea, which contains suitable pallid sturgeon habitat, is a minimum of 23.7 river miles from the proposed well pad and access road.	See Piping Plover protection measures	May Affect, Is Not Likely to Adversely Affect
Dakota Skipper (*Hesperia dacotae*)	Candidate	Native, uncultivated prairie was the dominant vegetation and the presence of a variety of flowering native forbs indicate suitable foraging habitat is present for the Dakota skipper. The creation of an access road may act to fragment Dakota skipper habitat.	The proposed well pad and access road would be reclaimed as soon as possible after their lifespan is complete. Impacted areas would be returned to pre-construction contours and seeded with a mixture of native seeds as directed by the BIA and Bureau of Land Management.	May Affect
Sprague's Pipit (*Anthus spragueii*)	Candidate	Native, uncultivated prairie is present. No adverse impact is anticipated as a result of construction activities because of the placement of multiple wells on one well pad location, which is intended to minimize disruption of habitat and disturbance buffers.	The proposed well pad would be reclaimed as soon as possible after its lifespan is complete. Impacted areas would be returned to pre-construction contours.	May Affect, Is Not Likely to Adversely Affect
Other Federally Protected Species				
Bald Eagle (*Haliaeetus leucocephalus*)	Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act (MBTA)	SWCA observed no suitable nesting habitat within a 0.5 mile line of sight survey; however, transient individuals may enter the project areas on occasion to forage or traverse.	A 0.5-mile line of sight survey was conducted during the initial field survey. No suitable nesting habitat was observed.	No Adverse Effects Anticipated

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Golden Eagle (*Aquila chrysaetos*)	BGEPA and MBTA	No suitable nesting habitat was observed within 0.5 mile of the proposed well pad location; however, golden eagles may occasionally visit or forage within or around the proposed project location.	A 0.5-mile line of sight survey was conducted during the initial field survey. The closest known golden eagle nest is approximately 2.94 miles southwest of the proposed location.	No Adverse Effects Anticipated
Migratory Birds	MBTA	Suitable habitat for nesting migratory birds occurs in the project area.	WPX would conduct all construction outside of the migratory bird breeding season (between July 16 and January 31). If construction occurs during the breeding season, WPX would mow and maintain vegetation within the project construction areas (access roads and well pads) prior to February 1 and until construction clearing has occurred, weather permitting. If that is not feasible, WPX would conduct an avian survey of the project area no greater than five days before construction begins, and if nests are discovered, notify the BIA and USFWS.	No Adverse Effects Anticipated

4.8 CULTURAL RESOURCES

Historic properties, or cultural resources, on federal or tribal lands are protected by many laws, regulations, and agreements. Section 106 of the National Historic Preservation Act of 1966 (16 USC 470 et seq.) requires, for any federal, federally assisted, or federally licensed undertaking, that the federal agency take into account the affect of that undertaking on any district, site, building, structure, or object that is included in the National Register of Historic Places (National Register) before the expenditure of any federal funds or the issuance of any federal license. Cultural resources is a broad term encompassing sites, objects, or practices of archaeological, historical, cultural, and religious significance. Eligibility criteria (36 CFR 60.4) 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 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 (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. Thus, BIA consults and corresponds with the THPO regarding cultural resources on all projects proposed within the exterior boundaries of the Reservation.

A cultural resource inventory of this well pad and access road was conducted by personnel of SWCA Environmental Consultants, using an intensive pedestrian methodology. Approximately 76.35 acres were inventoried between June 18 and 22, 2012 (Leroy et al. 2012). One previously recorded archaeological site was revisited and two additional sites were located that may possess the quality of integrity and meet at least one of the criteria (36 CFR 60.6) for inclusion on the National Register. As the lead federal agency, and as provided for in 36 CFR 800.5, on the basis of the information provided, BIA reached a determination of **no historic properties affected** for this undertaking, as the archaeological sites will be avoided. This determination was communicated to the THPO on September 7, 2012; however, the THPO did not respond within the allotted 30 day comment period.

If cultural resources are discovered during construction or operation, the operator shall immediately stop work, secure the affected site, and notify the BIA and THPO. Unexpected or inadvertent discoveries of cultural resources or human remains trigger mandatory federal procedures that include work stoppage and BIA consultation with all appropriate parties. Following any such discovery, operations would not resume without written authorization from the BIA. Project personnel are prohibited from collecting any artifacts or disturbing cultural resources in the area under any circumstance. Individuals outside the ROW are trespassing. No laws, regulations, or other requirements have been waived; no compensatory mitigation measures are required. The presence of qualified cultural resource monitors during construction activities is encouraged.

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. Therefore, no cumulative impacts to the archaeological record would occur as a result of implementation of the proposal.

4.9 PUBLIC HEALTH AND SAFETY

Health and safety concerns include H_2S gas that could be released as a result of drilling activities, hazards introduced by heavy truck traffic, and hazardous materials used or generated during construction, drilling, and/or production activities.

H_2S is extremely toxic in concentrations above 500 parts per million, but it has not been found in measurable quantities in the Bakken/Three Forks Formation. Before reaching the Bakken/Three Forks, however, drilling would penetrate the Mission Canyon Formation, which is known to contain varying concentrations of H_2S. Contingency plans submitted to the BLM comply fully with relevant portions of Onshore Oil and Gas Order No. 6 to minimize potential for gas leaks during drilling. Emergency response plans protect both the drilling crew and the general public within I mile of a well; precautions include automated sampling and monitoring by drilling personnel stationed at each well site.

Standard mitigation measures would be applied, and because release of H_2S at dangerous concentration levels is very unlikely, no direct impacts from H_2S are anticipated with implementation of the Proposed Action.

The number of tanker trips would depend on production, but WPX estimates approximately two trucks per day during the initial production period. Trucks for normal production operations would use the existing and proposed access roads. Produced water would be transported to an approved disposal site. All traffic would be confined to approved routes and conform to established load restrictions and speed limits for state and BIA roadways and haul permits would be acquired as appropriate.

The EPA specifies chemical reporting requirements under Title III of the Superfund Amendments and Reauthorization Act (SARA), as amended. No chemicals subject to reporting under SARA Title III (hazardous materials) in an amount greater than 10,000

pounds would be used, produced, stored, transported, or disposed of annually in association with the Proposed Action. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities would be used, produced, stored, transported, or disposed of in association with the Proposed Action. All operations, including flaring, would conform to instructions from BIA fire management staff.

Spills of oil, produced water, or other produced fluids would be cleaned up and disposed of in accordance with appropriate regulations. Sewage would be contained in a portable chemical toilet during drilling. All trash would be stored in a trash cage and hauled to an appropriate landfill during and after drilling and completion operations.

4.9.1 Potential Impacts to Public Health and Safety

With the implementation of the described reporting and management of hazardous materials, no adverse impacts to public health and safety are anticipated as a result of the proposed well pad. Other potential adverse impacts to any nearby residents from construction would be largely temporary. Noise, fugitive dust, and traffic hazards would be present for about 60 days during construction, drilling, and well completion as equipment and vehicles move on and off the site, and then diminish sharply during production operations. If a well proved productive, one small pumper truck would visit the well once a day to check the pump. Bakken/Three Forks wells typically produce both oil and water at a high rate initially. Gas would be flared initially and intermittently, while oil and produced water would be stored on the well pad in tanks and then hauled out by tankers until the well could be connected to gathering pipelines. Up to 10 400-barrel oil tanks and six 400-barrel water tanks would be located on the pad inside a steel containment wall. The wall would be designed to hold 110% of the capacity of the largest tank plus one full day's production volume.

4.10 SOCIOECONOMICS

This section discusses community characteristics such as population, housing, demographics, employment, and economic trends within the analysis area. Also included are data relating to the state of North Dakota and the United States, which provide a comparative discussion when compared to the analysis area. Information in this section was obtained from various sources including, but not limited to, the U.S. Census Bureau, the U.S. Bureau of Economics, and the North Dakota State Government.

4.10.1 Socioeconomic Analysis Area

The scope of analysis for social and economic resources includes a discussion of current social and economic data relevant to the project area and surrounding communities of the Reservation and McKenzie, Dunn, McLean, and Mountrail Counties, North Dakota. These counties were chosen for analysis because their proximity to the proposed well locations and overlap with the Reservation could result in socioeconomic impacts. These communities are collectively referred to as the analysis area.

4.10.2 Population and Demographic Trends

Historic and current population counts for the analysis area, compared to the state, are provided below in Table 4-9. The state population showed little change between the previous

two census counts (1990–2000); however, in 2010 the state population increased by 4.7% to 659,858 (Economic Profile System [EPS] 2012). Populations in McKenzie and Mountrail Counties have increased slightly from 2000 to 2010 while McLean and Dunn Counties had a rate of decline of -4.8% and -3.4%, respectively (EPS 2012). These declines can be attributed to more people moving to metropolitan areas, which are perceived as offering more employment opportunities. Population on the Reservation increased approximately 4.2% between 2000 and 2010 (EPS 2012). While Native Americans are the predominant group on the Reservation, they are considered the minority in all other areas of North Dakota.

As presented in Table 4-9, population growth on the Reservation (4.2% between 2000 and 2010) is consistent with the overall growth in the state of North Dakota (4.7%).

Table 4-9. Population and Demographic Trends in the Analysis Area.

County or Reservation	Population in 2010	% of State Population	% Change Between 1990–2000	% Change Between 2000–2010	Predominant Group in 2010 (%)	Predominant Minority in 2010 (Percent of Total Minority Population)
Dunn	3,477	0.53	-10.1	-3.4	Caucasian (85.2)	American Indian (9.4%)
McKenzie	6,004	0.91	-10.1	4.7	Caucasian (76.0)	American Indian (21.4%)
McLean	8,861	1.34	-11.0	-4.8	Caucasian (91.9)	American Indian (7.0%)
Mountrail	7,228	1.10	-5.6	9.0	Caucasian (66.5)	American Indian (28.4%)
Fort Berthold Indian Reservation	6,162	0.93	178.0[1]	4.2	American Indian (63.0)	American Indian (63.0)
Statewide	659,858	100.00	0.5	4.7	Caucasian (74.0)	Black or African American (12.5%)

Source: EPS 2012, U.S. Census Bureau 2011a.
[1] Reflects percent change between 1991 and 2001 (BIA 2001).

4.10.3 Employment

The economy in the state of North Dakota, including the Reservation and four counties in the analysis area, has historically depended on agriculture, including forestry, fishing and hunting, and grazing and farming. In 2010, the "education, health care, and social assistance" sector represented 24.2% of industry employment in the state, followed by retail trade (12.1%) (EPS 2012). Although the "agriculture, forestry, fishing and hunting, and mining" sector only represented 8.6% of employment in North Dakota, the sector has a significant role in the regional economies of Dunn, McKenzie, McLean, and Mountrail Counties, as well as the Reservation; this sector accounted for 29.1% of employment in Dunn County, 25.4% in McKenzie County, 21.5% in McLean County, 19.8% in Mountrail County, and 13.3% of

employment on the Reservation (EPS 2012). The "education, health care and social assistance" sector accounted for 20.5% of employment in Dunn County, 20.7% in McKenzie County, 26.0% in McLean County, 20.8% in Mountrail County, and 24.9% of employment on the Reservation (EPS 2012). Retail trade did not represent a significant amount of employment in the analysis area in 2010 or on the Reservation; however, energy development and extraction, power generation, and services related to these activities have become increasingly important over the last several years and many service sector jobs are directly and indirectly associated with oil and gas development.

In 2010, total employment in the state of North Dakota was 352,012 (Table 4-10). In 2010, the statewide unemployment rate was 3.6% of the workforce (Table 4-10). This is the lowest unemployment rate in the nation (Bureau of Labor Statistics 2011). All counties in the analysis area experienced a decrease in unemployment between 2005 and 2010 (Table 4-10).

Table 4-10. 2010 Total Employment and Unemployment Rates.

Location	Total Employment	Unemployment Rate	Change in Unemployment Rate (2005–2010)
United States	141,833,331	7.9%	+4.3%
North Dakota	352,012	3.6%	+0.4%
Dunn County	1,854	3.6%	-0.1%
McKenzie County	2,964	4.0%	-1.1%
McLean County	4,510	2.6%	-1.2%
Mountrail County	3,740	5.2%	-3.6%
Fort Berthold Indian Reservation	2,618	10.4%	N/A

Sources: Bureau of Labor Statistics 2011, 2011b; EPS 2010; U.S. Census Bureau 2010; U.S. Census Bureau 2005–2010.

In 2010, 4,411 residents of the Reservation constituted the total available workforce (over 16 years old). Unemployment on the Reservation was the highest of geographies in the analysis area at 10.4% (Table 4-10).

Residents of the Reservation are employed in similar ventures as those outside the Reservation (see discussion above for employment by industry). Typical employment includes ranching, farming, tribal government, tribal enterprises, schools, federal agencies, and recently, employment related to conventional energy development. The MHA Nation's Four Bears Casino and Lodge, located 4 miles west of New Town, employs approximately 320 people, of which 90% are tribal members (Fort Berthold Housing Authority 2008).

The Fort Berthold Community College, which is tribally chartered to meet the higher education needs of the people of the MHA Nation, had 11 full-time members and 25 adjunct members in academic year 2006–2007. Approximately 73% of the full-time faculty members are of American Indian/Alaska Native descent, approximately 88% of which are enrolled

members of the MHA Nation. Additionally, 65% of the part-time faculty members are of American Indian/Alaska Native descent and all (100%) are tribal members.

4.10.4 Income

Per capita income is often used as a measure of economic performance, but it should be used with changes in earnings for a realistic picture of economic health. Since total personal income includes income from 401(k) plans and other non-labor income sources like transfer payments, dividends, and rent, it is possible for per capita income to rise even if the average wage per job declines over time. The North American Industry Classification System is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. Per capita income, median household income, and poverty rates for the analysis area and North Dakota are presented in Table 4-11.

Table 4-11. Income and Poverty in Analysis Area.

Unit of Analysis	Per Capita Income[1] (2000)	Per Capita Income[2] (2010)	Median Household Income[2] (2010)	Percent of all People in Poverty[2] (2010)
Dunn County	$21,031	$24,832	$48,707	11.2%
McKenzie County	$22,269	$27,605	$48,480	12.8%
McLean County	$23,125	$27,029	$52,922	10.3%
Mountrail County	$23,045	$25,762	$48,480	12.4%
Fort Berthold Indian Reservation	$8,855	$18,059	$41,658	N/A
North Dakota	$25,624	$25,803	$46,781	11.7%

[1] U.S. Bureau of Economic Analysis 2011a, 2011b.
[2] U.S. Census Bureau 2010.

In 2010, the per capita income for the state was $25,803, compared to $24,832 for Dunn County, $27,605 for McKenzie County, $27,029 for McLean County, $25,762 for Mountrail County, and $18,059 for the Reservation (see Table 4-11). From 2000 to 2010, per capita income changes in the state were relatively flat with a 0.7% increase; Dunn County per capita income increased by 18.1%, 24.0% for McKenzie County, 16.9% for McLean County, and 11.8% for Mountrail County. Per capita income on the Reservation increased 104% between 1999 and the 2010 Census, however was 30% to 35% lower than the four counties in the analysis area and the state.

Of the four counties in the study area, Dunn and Mountrail Counties reported a per capita income in 2010 that was below the North Dakota state average. Per capita income on the Reservation was more than 42% below the state average (see Table 4-11). Reservation residents and MHA Nation members have per capita incomes and median household incomes below the averages of the counties in the analysis area, as well as statewide; and higher unemployment (see Table 4-10).

4.10.5 Housing

Workforce-related housing can be a key issue associated with oil and gas development. The effect of demand from the oil and gas industry on housing can be dramatic in terms of impacts on the availability and cost of both owner-occupied and rental units. Historical information on housing in the four counties in the analysis area was obtained from the U.S. Census Bureau (EPS 2012). The 2010 Census represents the most recent data, however even those data are now 2 years old. As a result, the existing housing situation is difficult to characterize quantitatively with any degree of certainty, since the status of the housing market and housing availability changes daily. Table 4-12 provides housing unit supply estimates for the analysis area and the Reservation. Overall, the number of owner-occupied units increased between 2000 and 2010, with the exception of McLean County. The number of renter-occupied units also increased between 2000 and 2010, with the exception of Dunn County.

The Fort Berthold 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. Housing for government employees is limited, with a few quarters in Mandaree and White Shield available to Indian Health Service employees in the Four Bears Community and to BIA employees. 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 4-12. Housing Data for the Reservation and Study Area Counties.

Region	Housing Units						Total		% Change 2000–2010
	Owner Occupied		Renter Occupied		Vacant				
	2000	2010	2000	2010	2000	2010	2000	2010	
Dunn	1,102	1,119	276	199	587	799	1,965	2,117	+7.74
McKenzie	1,589	1,687	562	781	568	551	2,719	3,019	+11.03
McLean	3,135	3,123	680	814	1,449	1,591	5,264	5,528	+5.02
Mountrail	1,859	2,065	701	786	878	1,098	3,438	3,949	+14.86
Reservation	1,122	1,157	786	975	973	1,190	2,881	3,322	+15.31
North Dakota	171,299	184,117	85,853	92,525	32,525	36,219	289,677	312,861	+8.00

Source: U.S. Census Bureau 2011b.

4.10.6 Potential Impacts to Socioeconomics

Impacts to socioeconomic resources of the analysis area would be minor and incremental and, therefore, would not adversely impact the local area. Short-term impacts to socioeconomic resources would generally occur during the construction/drilling and completion phase of the proposed wells. Long-term effects would occur during the production phase, should the wells prove successful.

As presented in Table 4-13, implementation of the proposed wells is anticipated to employ approximately 10 to 35 workers per well during the 7-month construction and completion phase. If the wells prove successful, WPX would install production facilities and begin long-term production. To ensure successful operations, production activities require between one and four full-time employees to staff operations. It is anticipated that a mixture of local and WPX employees would staff the proposed wells.

Table 4-13. Duration of Employment during Proposed Project Implementation.

Activity	Duration of Activity (average days per well)	Daily Personnel (average number per well)
Construction (access roads and well pads)	5–8 days	3–5
Drilling	30–35 days	8–15
Completion/Installation of facilities	Approx. 10 days	3–8
Production	Ongoing – life of well	1–4

The proposed project is unlikely to result in any measurable population increases in the analysis area. While it is possible that job seekers from other localities could relocate to the area in search of employment, existing industry expertise and services in the analysis area and on the Reservation is generally adequate to support additional oil and gas development. Further, some of these project-related jobs would be derived from existing jobs that would continue as a result of continued development and operations that would otherwise have been lost; some jobs would be newly created parallel or transitional jobs. In terms of the overall population in the analysis area (over 30,000 residents in 2010; see Table 4-9), employment-related increases would be negligible, and would not likely increase the demand for services or infrastructure on the Reservation or the communities near the project area.

Further, unemployment rates in 2010 (see Table 4-10) suggest that there is an adequate workforce available in the analysis area. As a result, employment associated with well construction and production, etc. (see Table 4-13) would likely reduce unemployment in the analysis area.

In terms of project-related housing impacts, there is adequate housing for workers. As noted above, the analysis area and the Reservation had a relatively high number of vacant units, ranging from 18% to 38% in 2010 (see Table 4-12). Additionally, housing has remained available despite the growth of the population on the Reservation specifically, and across the analysis area. The levels of available housing are therefore anticipated to be adequate to absorb any minor increase in population related to this proposed project. As such, the proposed project would not have measurable impacts on housing availability or community infrastructure in the area. The proposed project also would not result in any identifiable impacts to social conditions and structures within the communities in the project area.

Implementation of the proposed project would likely result in direct and indirect economic benefits associated with industrial and commercial activities in the area, including benefits to the Reservation and the overall state of North Dakota, and potentially to local communities near the Reservation. Direct impacts would include increased spending by contractors and workers for materials, supplies, food, and lodging in the analysis area, which would be subject to sales and lodging taxes. Other state, local, and Reservation tax payments and fees would be incurred as a result of the implementation of the proposed project, with a small percentage of these revenues distributed back to the local economies. Wages due to employment would also impact per capita income for those that were previously unemployed or underemployed. Indirect benefits would include increased spending from increased oil and gas production, as well as a slight increase in generated taxes from the short-term operations. Mineral severance and royalty taxes, as well as other relevant county and Reservation taxes on production would also grow directly and indirectly as a result of increased industrial activity in the oil and gas industry.

4.11 ENVIRONMENTAL JUSTICE

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, signed in 1994 by President Clinton, requires that federal agencies advance EJ by pursuing fair treatment and meaningful involvement of minority and low-income populations. Fair treatment means such groups should not bear a

disproportionately high share of negative environmental consequences from federal programs, policies, decisions, or operations. Meaningful involvement means federal officials actively promote opportunities for public participation and federal decisions can be materially affected by participating groups and individuals.

The EPA headed the interagency workgroup established by the 1994 Executive 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 Executive Order.

EJ is an evolving concept with potential for disagreement over the scope of analysis and the implications for federal responsiveness. Due to the population numbers, tribal members on the Great Plains qualify for EJ consideration as both a minority and low-income population. Table 4-15 summarizes relevant data regarding minority populations for the analysis area.

Based on data for the American Community Survey estimates (U.S. Census Bureau 2005–2010), North Dakota's total minority population in 2010 comprised approximately 58,059 persons, or 8.80% of the state's total population. This represents an increase of 27.65% over the 2000 minority population of the state. Within the analysis area, the number of Caucasian residents decreased, while minorities in nearly all categories increased. The analysis area experienced a strong increase in the percentage of minority populations during the period from 2000 until 2010 (Table 4-14) (EPS 2012). The minority populations of Dunn, McKenzie, McLean, and Mountrail Counties increased 0.62%, 13.22%, 2.80%, and 14.35%, respectively, compared with the statewide increase of 27.65%.

Table 4-14. Minority Population Breakdown by North Dakota County and Race, 2000–2010.

Race	Dunn		McKenzie		McLean		Mountrail		North Dakota	
	2000	**2010**	**2000**	**2010**	**2000**	**2010**	**2000**	**2010**	**2000**	**2010**
Total Population	3,600	3,477	5,737	6,004	9,311	8,861	6,629	7,228	642,204	659,858
Non-Hispanic	3,573	3,401	5,679	5,875	9,230	8,748	6,542	7,009	634,418	646,980
Hispanic or Latino[1]	27	76	58	129	81	113	87	219	7,786	12,878
Races										
Caucasian	3,123	2,957	4,457	4,503	8,632	8,060	4,546	4,662	596,722	589,112
African American	1	4	4	14	2	15	7	35	4,157	6,778
American Indians and Alaska Natives	448	326	1,216	1,284	568	623	1,988	2,052	31,440	34,798
Asian / Pacific Islanders	8	14	4	58	12	5	17	9	3,912	6,132
Two or more races	25	141	39	74	97	55	71	286	5,973	10,351
All minorities *(sum of races other than Caucasian)*	482	485	1,263	1,430	679	698	2,083	2,382	45,482	58,059
% minority population	13.39	13.95	22.01	23.82	7.29	7.88	31.42	32.96	7.08	8.80
Change in minority population (2000–2010)	+0.62%		+13.22%		+2.80%		+14.35%		+27.65%	

[1] Hispanic or Latino may be of any race.
Sources: U.S. Census Bureau 2011c.

In 2010, the predominant minority group in each county was American Indians and Alaska Natives, ranging from 7.0% in McLean County to 28.4% in Mountrail County, compared to the state which was 5.0% (EPS 2012). As discussed earlier, American Indians represent 63% of the overall population on the Reservation (see Table 4-15). Poverty rate data for the counties in the analysis area are summarized in Table 3.21. The data show that poverty rates generally decreased in the analysis area between 2000 and 2010, with the exception of Mountrail County, which experienced a 0.8% increase in individuals living below the poverty level and exceeded the statewide poverty rate of 12.3% (Table 4-15). All counties within the analysis area have higher median household incomes than the statewide household income of $46,781; however, the median family household income on the Reservation is approximately 11% lower than the statewide figure.

Table 4-15. Individual Poverty Rates and Median Household Income for the Analysis Area.

Location	2000	2010	2010 Median Household Income
Dunn County	13.3%	8.6%	$48,707
McKenzie County	15.7%	10.0%	$48,480
McLean County	12.3%	9.3%	$52,922
Mountrail County	15.7%	16.5%	$48,480
Fort Berthold Indian Reservation	ND	26.0%	$41,658
North Dakota	10.4%	12.3%	$46,781

Sources: U.S. Department of Agriculture 2011; EPS 2012.

4.11.1 Potential Impacts to Environmental Justice

As demonstrated in the minority and poverty level discussions above, EJ communities are present in the analysis area. In fact, minority populations are increasing in the analysis area compared with statewide numbers, which could result in disproportionately beneficial impacts from the proposed oilfield development that would be supported by the installation of the proposed well pads. These would derive from direct and indirect economic opportunities for tribal members. Generally, existing oil and gas leasing has already benefited the MHA Nation government and infrastructure from tribal leasing, fees, and taxes. Current oil and gas leasing on the Reservation has also already generated revenue to MHA Nation members who hold surface and/or mineral interests. However, owners of allotted surface within the analysis area may not necessarily 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 compensation for productive acreage lost to road and well pad construction. Those with mineral interests also may benefit from royalties on commercial production if the wells prove successful. Profitable production rates at proposed locations might lead to exploration and development of additional tracts owned by currently non-benefitting allottees. In addition to increased revenue for land and mineral holders, exploration and development would increase employment on the Reservation with oversight from the Tribal Employment Rights Office, which would help alleviate some of the poverty prevalent on or near the Reservation. Tribal members without either surface or mineral rights would not receive any direct benefits, except through potential

employment, should they be hired. Indirect benefits of employment and general tribal gains would be the only potential offsets to negative impacts. Poverty rates in the analysis area have generally decreased (with the exception of Mountrail County) since oil and gas development began after 2000, as shown in Table 4-15.

Potential adverse impacts could occur to tribes and tribal members, as well, such as the potential disturbance of any traditional cultural properties and cultural resources. These potential impacts are reduced through surveys of proposed well locations and access road routes; mitigation measures required by the BIA; and thorough reviews and determinations by the BIA that there would be no effect to historic properties. The possibility of disproportionate impacts to tribes or tribal members is further reduced by the requirement for immediate work stoppage following an unexpected discovery of cultural resources of any type. Mandatory consultation would take place during any such work stoppage, affording an opportunity for all affected parties to assert their interests and contribute to an appropriate resolution, regardless of their home location or tribal affiliation.

The proposed project would not result in significant impact to any other critical element, including air quality, public health and safety, transportation, water quality, wetlands, wildlife, soils, or vegetation. Through the avoidance of such impacts, no disproportionate impact is expected to low-income or minority populations. The Proposed Action offers many positive consequences for tribal members, while recognizing EJ concerns. Procedures summarized in this document and in the APD are binding and sufficient. No laws, regulations, or other requirements have been waived; no compensatory mitigation measures are required.

4.12 MITIGATION AND MONITORING

Many protective measures and procedures are described in this document and in the APD. 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 on a case by case basis for all ground-disturbing activities. Each phase of construction and development through production would be monitored by the BLM, BIA, and representatives of the MHA Nation 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 would be developed by the BLM and BIA that documents the results of monitoring in order to adapt the projects to eliminate any adverse impact on the environment.

Mitigation opportunities can be found in general BMPs (Section 4.12.1) and operator-committed BMPs and mitigation measures (Section 4.12.2). BMPs are loosely defined as techniques used to lessen the visual and physical impacts of development. The BLM has created a catalog of BMPs that, when properly implemented, can assist industry in a project's design, scheduling, and construction techniques. WPX would implement, to the extent possible, BMPs in an effort to mitigate environmental concerns in the planning phase, thereby allowing for smoother analysis, and possibly faster project approval. Many of these are required by the BLM when drilling federal or tribal leaseholds and can be found in the surface use plan in the APD. The regulatory agencies provide Conditions of Approval and enforcement would occur as a result of non-compliance which adds incentives for strict adherence to the BMPs.

4.12.1 General BMPs

Although largely project-specific, there are a number of BMPs that can, and should, be considered on development projects in general. The following are examples of general BMPs that WPX has committed to using.

- Planning roads and facility sites to minimize visual impacts.
- Using existing roads to the extent possible, upgrading as needed.
- Reducing the size of facility sites and types of roads to minimize surface disturbance.
- Minimizing topsoil removal.
- Stockpiling stripped topsoil and protecting it from erosion, by seeding with native grasses, until reclamation activities commence. At that time, the soil would be redistributed and seeded on the disturbed areas. The reclaimed areas would be protected and maintained until the sites are fully stabilized.
- Avoiding removal of, and damage to, trees, shrubs, and groundcover where possible.
- Clearing a facility or well site to accommodate vehicles or equipment.
- Maintaining buffer strips or using other sediment control measures to avoid sediment migration to stream channels as a result of construction activities.
- Planning for erosion control.
- Storing chemicals properly (including secondary containment).
- Keeping sites clean, including containing trash in a portable trash cage. The trash cage would be emptied at a state-approved sanitary landfill.
- Conducting snow removal activities in a manner that does not adversely impact reclaimed areas and areas adjacent to reclaimed areas.
- Avoiding or minimizing topographic alterations, activities on steep slopes, and disturbances within stream channels and floodplains to the extent possible.
- Maintaining buffers around work areas where there is a risk of fire as a result of construction activities.
- Keeping fire extinguishers in all vehicles.
- Planning transportation to reduce vehicle density.
- Posting speed limits on roads.
- Avoiding traveling during wet conditions that could result in excessive rutting.
- Painting facilities a color that would blend with the environment.
- Practicing dust abatement on roads.
- Re-contouring disturbed areas to approximate the original contours of the landscape.
- Developing a final reclamation plan that allows disturbed areas to be quickly absorbed into the natural landscape.

WPX commits to implementing all BMPs identified during the on-site inspection that can be used to mitigate environmental concerns specific to projects associated with below-ground

linear alignments, such as those included in the proposed utility corridor. BMPs identified during the on-site inspection include the following.

- Locate the proposed well pad and utility corridor in areas with existing disturbances to the extent possible.
- Install covers under drip buckets and spigots.
- Use a closed-loop drilling system where there would be no pit unless there is an emergency. Any fluids and cuttings would be transported off site to be disposed of at an approved facility.
- Construct berms and install straw waddles on the downslope sides of the proposed well pad.
- Follow the contour (form and line) of the landscape.
- Co-locate multiple utility lines in the same trench.
- Use natural (topography, vegetation) or artificial (berms) features to help screen facilities such as valves and metering stations.
- Paint facilities a color that would blend with the environment.
- Contour disturbed areas to approximate the original contours of the landscape.
- Implement proper storage of chemicals (including secondary containment).
- Keep sites clean, including containing trash in a portable trash cage. The trash cage would be emptied at a state-approved sanitary landfill.
- Avoid or minimize topographic alterations, activities on steep slopes, and disturbances within stream channels and floodplains to the extent possible.
- Keep a watering truck on site and water the access road as necessary, especially during periods of high winds and/or low precipitation.
- Avoid construction and vehicle use during wet conditions that could result in excessive rutting.
- Avoid removal of, or damage to, trees and woody shrubs where possible.
- Mow the facility or well site instead of clearing vegetation to accommodate vehicles or equipment.
- Conduct interim reclamation of at least half the disturbed area.
- Conduct reclamation without delay if a well is determined to be unproductive, or upon completion of commercial production.
- Lay matting and/or conduct hydro seeding on the fill side of the pad.
- Grind trees and other woody material removed from the pad and add to the topsoil.
- Minimize topsoil removal and stockpile stripped topsoil and protect it from erosion until reclamation activities commence.
- During reclamation, redistribute and seed the topsoil on the disturbed areas, and protect and maintain reclaimed areas until the sites are fully stabilized.

- Develop a final reclamation plan that allows disturbed areas to be quickly absorbed into the natural landscape.
- Maintain buffer strips or use other sediment control measures to avoid sediment migration to stream channels as a result of construction activities.
- Implement an erosion control plan.
- Implement approved Stormwater Pollution Prevention Plan and BMPs for the construction of the access roadway and proposed well pad to prevent erosion and sedimentation.
- Install appropriately sized culverts or other stable stream crossings for any intermittent stream crossings.
- Design roads and facility sites to minimize visual impacts.
- Use existing roads to the extent possible, upgrading as needed.
- Minimize the size of facility sites and types of roads to reduce surface disturbance.
- Avoid locating ROWs on steep slopes.
- Share any common ROWs whenever possible.
- Plan transportation to reduce vehicle density.
- Post speed limits on roads.
- Conduct snow removal activities in a manner that does not adversely impact reclaimed areas and areas adjacent to reclaimed areas.
- Require construction crews to carry fire extinguishers in their vehicles and/or equipment.
- Require construction crews be trained in the proper use of fire extinguishers.
- Contract with the local fire district to provide fire protection.

WPX is committed to implementing these and/or other BMPs to the extent that they are technically feasible and would add strategic and measurable protection to the project area, as well as all specific items identified at the on-site inspections for the proposed well pad and utility corridor.

4.12.2 Mitigation and Safety Measures Committed to by WPX

4.12.2.1 Air Quality

- Transportation BMPs to reduce the amount of fugitive dust and vehicle emissions
  - Use directional drilling to drill multiple wells from a single well pad;
  - use centralized water storage and delivery, well fracturing, gathering systems;
  - use telemetry to remotely monitor and control production;
  - use water or dust suppressants to control fugitive dust on roads;
  - control road speeds; and
  - use van or carpooling.

- Drilling BMPs to reduce rig emissions
  - Use cleaner diesel (Tier 2, 3, and 4) engines;
  - use natural gas-powered engines; and
  - use "green" completions to recapture product that otherwise would have been vented or flared.
- Unplanned or emergency releases
  - Use high-temperature flaring if gas is not recoverable.
- Vapor recovery
  - Use enclosed tanks instead of open pits to reduce fugitive VOC emissions; and
  - use vapor recovery units on storage tanks.
- Inspection and maintenance
  - Use and maintain proper hatches, seals, and valves;
  - optimize glycol circulation and install a flash tank separator;
  - use selective catalytic reduction; and
  - replace high-bleed with low-bleed devices on pneumatic pumps.
- Monitoring and repair
  - Use directed inspection and maintenance methods to identify and cost-effectively fix fugitive gas leaks; and
  - install an air quality monitoring station.

4.12.2.2 Dust Control

During construction, a watering truck may be kept on site and the access road would be watered as necessary, especially during periods of high winds and/or low precipitation.

4.12.2.3 Utility Lines

All utility lines, including gathering pipelines, and electric and fiber optic lines, essential to oil well operations, would be installed underground with the exception of temporary above-ground freshwater pipelines.

4.12.2.4 Fire Control

WPX would implement fire prevention and control measures including, but not limited to:

- requiring construction crews to carry fire extinguishers in their vehicles and/or equipment;
- training construction crews in the proper use of fire extinguishers; and
- contracting with the local fire district to provide fire protection.

4.12.2.5 Traffic

Construction personnel would stay within the approved ROW or would follow designated access roads.

4.12.2.6 Closed-Loop System

WPX commits to using a closed-loop system for the proposed well pad location.

4.12.2.7 Wildlife

During an informal Section 7 consultation with the USFWS, the following mitigation measures were agreed upon to reduce the potential impact to protected species.

4.12.2.7.1 Bald and Golden Eagle and Migratory Bird Protective Measures

- SWCA biologists conducted a 0.5-mile line-of-sight survey for eagle individuals and nests during their on-site environmental survey. No eagles or nests were observed within 0.5 mile of the proposed project area.
- WPX would conduct all construction outside of the migratory bird breeding season (between July 16 and January 31); or, if construction occurs during bird breeding season, WPX would either:
  - mow and maintain vegetation within the project construction area (utility corridor and well pad), weather permitting, prior to and during the breeding season to deter migratory birds from nesting in the project area until construction is underway; or
  - conduct an avian survey of the project area no greater than five days before construction begins, and if nests are discovered, notify BIA and USFWS.

4.12.2.7.2 ESA Protective Measures

- **Piping Plover and its Designated Critical Habitat, Interior Least Tern, and Pallid Sturgeon**: Straw waddles, seeding and matting or hydroseeding, check dams, and diversion trenches would be installed as erosion control mechanisms to reduce the potential for sediment transport into drainages and subsequently Lake Sakakawea. The disturbed area would be reclaimed per the BIA's requirements as soon as practicable after construction is complete.
- **Whooping Crane**: If a whooping crane is sighted within 1 mile of the proposed project area, work would be stopped and the BIA and USFWS would be notified. In coordination with the USFWS, work may resume after the bird(s) leaves the area.
- WPX would use a closed-loop drilling system and would surround the proposed well pad with a 24-inch synthetically enhanced berm in addition to steel containment walls around the tank battery that would contain 110% of the largest tank plus one full day's production.

It is the opinion of the USFWS that WPX's commitment to implement the avoidance measures described above demonstrates compliance with the ESA, MBTA, and BGEPA. Copies of the USFWS letters resulting from the informal Section 7 consultation are provided in Appendix D.

4.12.2.8 Cultural Resources

WPX recognizes the need to protect cultural resources on the project locations and has committed to the following.

- Prohibiting all project workers from collecting artifacts or disturbing cultural resources in any area under any circumstances.
- Avoiding impacts to National Register-eligible or unevaluated cultural resources on well sites and access roads. If cultural resources are discovered during construction or operation, work shall immediately be stopped, the affected site secured, and BIA and THPO notified. In the event of a discovery, work shall not resume until written authorization to proceed has been received from the BIA.

4.13 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Removal and consumption of oil and/or gas from the Bakken/Three Forks Formation would be an irreversible and irretrievable commitment of resources. Other potential resource commitments include land area devoted to the disposal of cutting, soil lost to erosion (i.e., wind and water), unintentionally destroyed or damaged cultural resources, wildlife mortality as a result of collision with vehicles (i.e., construction machinery and work trucks), and energy expended during construction and operation.

4.14 SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Short-term development activities would not detract significantly from long-term productivity, and use, of the project area. The construction of the utility corridor and well pad would eliminate any forage or habitat use by wildlife and/or livestock. Any allottees to which compensation for land disturbance is owed would 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 area would facilitate revived wildlife and livestock usage, stabilize the soil, and reduce the potential for erosion and sedimentation.

4.15 CUMULATIVE IMPACTS

4.15.1 Environmental

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. For purposes of this analysis, the CIAA is considered to be all lands within a 20-mile radius of the project area.

Past and current disturbances in the CIAA include farming, grazing, roads, and other oil and gas wells, both on the Reservation and off. Although the project area is surrounded on all sides by Reservation lands, land ownership is not relevant to the assessment of cumulative impacts except as it is predictive of future impacts. Farming and grazing activities occur on the Reservation regardless of the density of oil and gas development, since undivided interests in the land surface, range permits, and agricultural leases are often held by different tribal

members than those holding mineral rights, such that economic benefits of both agricultural and oil and gas activities currently co-exist.

Over the past several years, exploration has accelerated over the Bakken/Three Forks Formation. Existing oil and gas wells within 1 mile, 5 miles, 10 miles, and 20 miles of the project area are listed in Table 4-16. Existing oil and gas development has been occurring for several years on private fee land surrounding the Reservation, such that many more wells currently exist off the Reservation, as shown in Table 4-16 and Figure 4-5.

Table 4-16. Number of Confidential, Active, and Permitted Wells Surrounding the Project Area.

Myrtle Old Dog #24H	1-mile CIAA		5-mile CIAA		10-mile CIAA		20-mile CIAA	
Reservation (on/off)	on	off	on	off	on	off	on	off
Active Wells	1	-	62	-	163	24	373	379
Confidential Wells	5	-	48	-	147	12	297	127
Permitted Wells	0	-	2	-	12	0	18	1
Existing cumulative total wells CIAA	6		110		346		1,176	

CIAA = cumulative impact analysis area

Reasonably foreseeable impacts of future developments in the CIAA must also be considered. Should development of the proposed well pad prove productive, it is likely that WPX and other operators would pursue additional development in the CIAA. For purposes of cumulative impact analyses, the density of active and permitted oil wells and associated facilities (including access and utility corridors) is expected to increase steadily within the CIAA over the next decade. Oil and gas development is expected to have a minor cumulative effect on land use patterns and the human and natural environment, due to the dispersed and passive nature of the development.

Within the Reservation and near the proposed project area, development projects remain few and widely dispersed. Dispersed location of well pads is achieved through the use of federal planning units, called spacing units, designed to maintain productivity of future wells. The dominant spacing units are 1,280 acres, although 680-acre and 320-acre units also may exist. Given the expected dispersal of future oil and gas well development, the current pattern of farming and ranching activities is expected to continue as the secondary economic activity in the CIAA with little change because virtually all available acreage is already organized into range units to use surface resources for economic benefit. The same economic incentives for co-existing agricultural land uses and oil and gas development may not occur off the Reservation, and agriculture and grazing may be reduced in the future as the economic benefits of oil production increases.

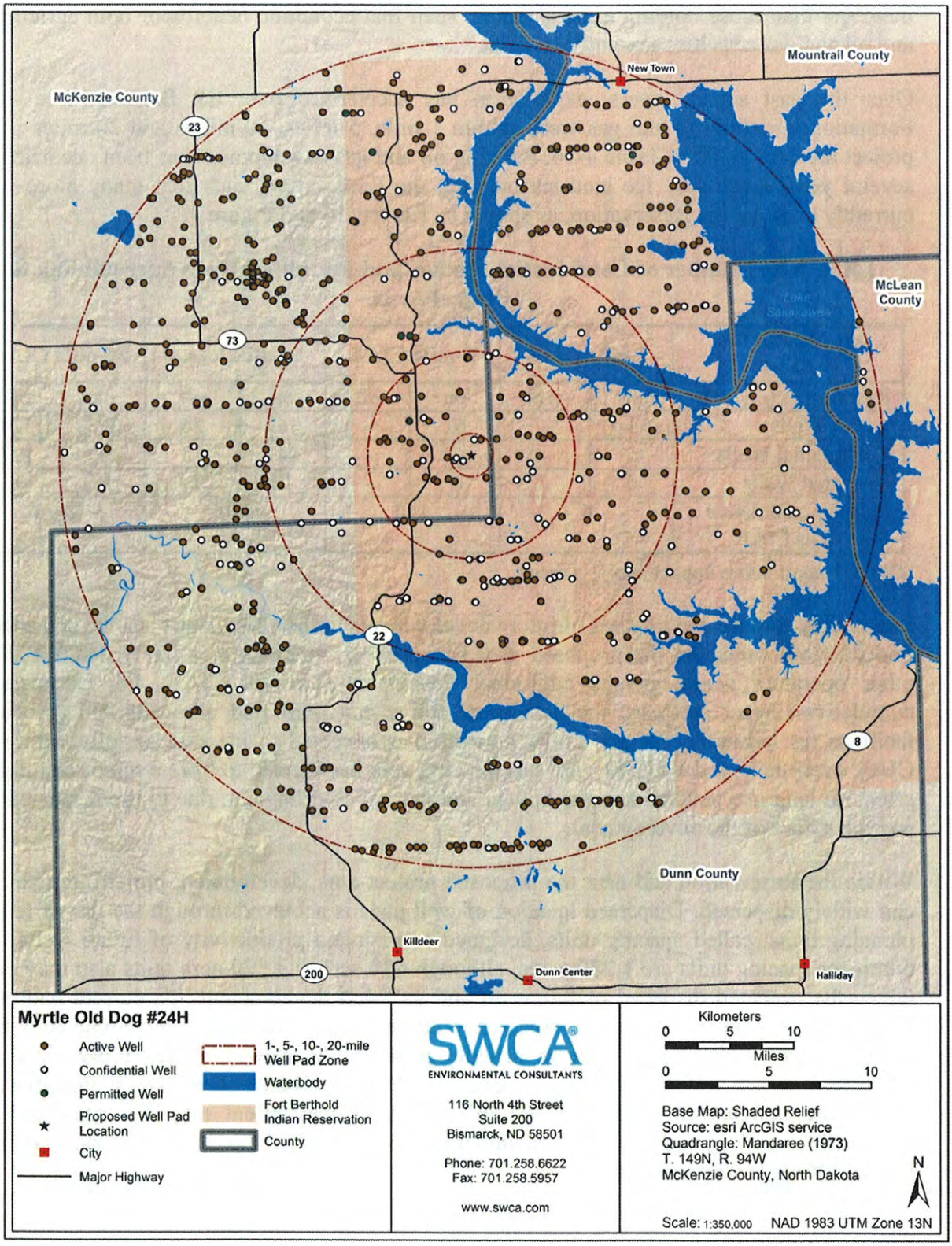


Figure 4-5. Existing and projected future oil and gas development within a 1-, 5-, 10-, and 20-mile radius of the proposed Myrtle Old Dog #24H well pad location.

4.15.2 Air Quality

If the pace and level of oil and gas development within this region of the state continues at the current rate over the next few years, it is expected to contribute incrementally 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 would occur predominantly during construction and drilling operations and would therefore be localized, largely temporary, and limited in comparison with regional emissions. Since the AQI is exceptionally low in the CIAA (see Section 4.2), and the expected future development would be widely dispersed in time and space, the Proposed Action is not expected to impact attainment status based on any of the Primary and Secondary NAAQS for criteria pollutants or other regulated air emissions. Contribution of the proposal to incremental increases of unregulated GHG emissions is expected to be minor.

4.15.3 Hydrology

No surface discharge of water would occur under the Proposed Action, nor would any unpermitted use of surface water or groundwater occur as a result of project development. The Proposed Action, when combined with other future actions, such as cattle grazing, other oil and gas development, and agriculture in the CIAA would tend to 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 Squaw Creek sub-watershed. However, any potential increase in degradation would be reduced by WPX's commitment to minimizing disturbance, using straw waddles, diversion ditches, seeding and matting, and check dams, along with implementing BMPs designed to reduce impacts (Section 4.12).

4.15.4 Access Roads

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 approximately 1.4 miles of roads in the CIAA, adding incrementally to existing and future impacts to soil resources, dust deposition, and erosion processes. New well field developments would be speculative until APDs are submitted to the BLM and BIA for approval. Additional wells are likely to be drilled in the same general area as the Proposed Action, using many of the same main access roads and minimizing the disturbance as much as possible.

4.15.5 Erosion Control BMPs

WPX is committed to using BMPs to mitigate the potential effects of erosion. 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 in conjunction with slopes, and planting cover crops to stabilize soil following construction and before permanent seeding takes place. Additional information regarding BMPs can be found in Section 4.12, Mitigation and Monitoring.

4.15.6 Vegetation

The Proposed Action would result in some loss of vegetation and ecological diversity of mixed-grass prairie habitat. In addition, vegetation resources across the project area could be affected by foreseeable future energy development and surface disturbance in the CIAA. Continued oil and gas development within the CIAA could result in the loss, and further fragmentation, of mixed-grass prairie habitat. Incremental impacts to quality native prairie may occur in the future from vegetation clearing and soil disturbance, soil loss, compaction, and increased encroachment of unmanaged invasive weed species. 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 certain listed species known to use native mixed-grass prairie habitats. Such impacts could be partially offset by avoidance of previously undisturbed prairie habitats, as well as implementation of soil and vegetation mitigation measures and BMPs (Section 4.12). Cumulative impacts to vegetation and other biological resources are therefore expected to be minor.

4.15.7 Wildlife

Cumulatively, the potential impacts on various species and their habitats would be minimal. Currently, no adverse impacts have been identified for either the Reservation, or the adjacent areas. The BMPs (Section 4.12) designed to protect individual species and classes of species of interest would also protect most of the remaining species both locally and cumulatively.

4.15.8 Cultural Resources

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. Therefore, no cumulative impacts to the archaeological record would occur as a result of implementation of the proposal.

4.15.9 Socioeconomic

The Proposed Action would incrementally add to existing and future socioeconomic impacts in the general area. The Proposed Action includes development of one new well pad, 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 Action. Therefore, little change in employment would be expected over the long term.

No significant negative impacts are expected to affect any element of the human and natural environment; impacts would generally be low and mostly temporary from both a context and intensity standpoint. Current impacts from oil and gas-related activities are still fairly dispersed, and the required BMPs (Section 4.12) would limit potential impacts. The cumulative impacts from activities on the Reservation are still limited enough to not appear to be significant. This is being studied currently by a programmatic EA. Cumulative impacts over the entire field have not been assessed. Information available to the authors of this report

from the State of North Dakota indicates all impacts are non-significant also by the standards in 40 CFR 1500.8.28.

4.15.10 Hydraulic Fracturing

Concerns regarding fracturing fluid contamination of aquifers in natural gas formations outside of the Bakken/Three Forks Formation that are commonly used for drinking water have been recently investigated by the EPA (EPA 2010). Aquifers identified in Table 4-3 of this document include the Sentinel Butte Formation which is used for drinking water and occurs at depths of 0 to 670 feet below ground surface, while the deepest aquifer identified in the project area, the Fox Hills Formation, occurs at depths of 1,100 to 2,000 feet below ground surface. By contrast, the oil wells proposed in this undertaking would achieve depths no shallower than 9,200 feet below ground surface, well below any known aquifer in the project area. Additionally, as discussed in Section 3.2.6 of this document, surface casing would be employed to a depth of 2,500 feet below ground surface to isolate all near surface aquifers. Potentially as a result of the disparity in depths of the aquifers and oil wells, no direct or indirect impacts have yet been identified with fracturing in the Bakken/Three Forks Formation.

4.15.11 Reclamation

WPX has committed to implementing interim reclamation of the utility corridor and well pad immediately following construction and completion. Implementation of both interim and permanent reclamation measures would decrease the magnitude of cumulative impacts.

5.0 CONSULTATION AND COORDINATION

The BIA must continue to make efforts to solicit the opinions and concerns of all stakeholders. For the purpose of this EA, a stakeholder is considered any agency, municipality, or individual person to 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 location of the proposed project area and explaining the actions proposed at the site was sent in advance of this EA to allow stakeholders ample time to submit comments or requests for additional information; a copy of the general scoping letter is provided in Appendix E. The comments and suggestions received from stakeholders are presented in Table 5-1. Additionally, a copy of this EA would be submitted to all cooperating federal agencies and also to those agencies with interests in or near the proposed actions that could be affected by those actions. The USFWS concurrence letter is provided in Appendix D.

Table 5-1. Scoping Comments.

Name	Organization	Comment	Response to Comment
Bagley, Lonny	BLM	No Comment	
Bercier, Marilyn	BIA	No Comment	
Berg, George	NoDak Electric Cooperative, Inc.	No Comment	
Boyd, Bill	Midcontinent Cable Company	No Comment	
Brugh, V. Judy	MHA Nation	No Comment	
Cayko, Richard	McKenzie County	No Comment	
Chevance, Nick	National Parks Service	No Comment	
Cimarosti, Dan	USACE	No Comment	
Crows Breast, Elgin	THPO, Three Affiliated Tribes	No Comment	
Danks, Marvin	Fort Berthold Rural Water Director	No Comment	
Davis, Scott	Indian Affairs Commission	No Comment	
Dhieux, Joyce	EPA	No Comment	
Dixon, Doug	Montana Dakota Utilities	No Comment	
Dressler, Patricia	Federal Aviation Administration	No Comment	
Duttenhefner, Kathy	North Dakota Parks and Recreation	1) The project as defined does not affect state park lands or Land and Water Conservation Fund recreation projects. 2) Project area approx. 1-mile to Killdeer Mountain Four Bears Scenic Byways, and should be completed with the least amount of visual impact.	See Sections 3.2.10, Reclamation, 4.5, Wetlands, 4.6, Vegetation and Noxious Weeds, 4.7, Wildlife, and 4.12, Mitigation and Monitoring, for more information.
Erhardt, Toni	USACE, North Dakota Regulatory Office	No Comment	
Ferris, Cade	Turtle Mountain Band of Chippewa	No Comment	
Fox, Fred	MHA Nation	No Comment	

Name	Organization	Comment	Response to Comment
Glatt, David	North Dakota Department of Health	Impacts will be minor and can be controlled by proper construction methods including air quality controls, testing for erionite, minimize impacts to streams and water sources, and storm water permitting and control.	See Sections 3.2.3, Well Pad, and 4.12, Mitigation and Monitoring, for site-specific details and BMPs.
Hanson, Jesse	North Dakota Parks and Recreation	No Comment	
Head, Jennifer	WPX Energy Williston, LLC	No Comment	
Hauck, Reinhard	Dunn County	No Comment	
Hefferman, Dan	EPA	No Comment	
Hoffman, Warren	Killdeer, Weydahl Field	No Comment	
Hudson-Schenfisch, Julie	McLean County Board of Commissioners	No Comment	
Hynek, David	Chair, Mountrail Board of County Commissioners	No Comment	
Jarski, Tim	Reservation Telephone Cooperative	No Comment	
Johnson, Harley	New Town Municipal Airport	No Comment	
Kadrmas, Ray	Dunn County	No Comment	
Kuehn, John	Parshall-Hankins Field Airport	No Comment	
Laux, Eric	USACE	No Comment	
Link, Greg	ND Game and Fish Department	Recommends construction be avoided to extent possible in native prairie, wooded draws, riparian corridors, and wetland areas.	See Affected Environment Sections 4.5, Wetlands, 4.6, Vegetation and Noxious Weeds, and 4.7, Wildlife.
Klitzka, Nelson	WPX Energy Williston, LLC	No Comment	
Kyner, Dave	FEMA	Recommends contacting the local Floodplain Manager for FBIR for guidance retarding possible permits required	BIA, WPX, and SWCA held on-site meetings to ensure best well pad and utility corridor placement.
Manager of Engineering Services	McKenzie Electric Cooperative	No Comment	
Massad, Mary	Southwest Water Authority	No Comment	

Name	Organization	Comment	Response to Comment
McKenna, Mike	North Dakota Game and Fish Department	No Comment	
McPhillips, Kelly	Bureau of Reclamation	Project components could affect BOR facilities (rural water pipelines). Coordinate with the FBIR Rural Water director.	See Section 3.2.4, Access Road and Utility Corridor. WPX would consult with the Rural Water Director if the project components should cross or otherwise affect any BOR rural water lines.
Murphy, Charles	Chairman, Standing Rock Sioux Tribe	No Comment	
Nash, Mike	BLM	No Comment	
Nelson, Richard	U.S. Bureau of Reclamation	No Comment	
Herman, Jeff	Petro-Hunt, LLC	No Comment	
Obenauer, Steve	FAA	No Comment	
Olson, Frances	McKenzie County	No Comment	
Overbey, Rachel	Enerplus Resources Corp.	No Comment	
Paaverud, Merl	State Historical Society	Consultation is with MHA Nation THPO	Letter has been sent to THPO
Packineau, Mervin	MHA Nation	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	MHA Nation	No Comment	
Prchal, Doug	North Dakota Parks and Recreation Department	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	
Sieler, Steven	NRCS	Avoid impacts to Wetlands, if impact will occur, NRCS can conduct wetland determination	See Section 4.5, Wetlands

Name	Organization	Comment	Response to Comment
Sorensen, Charles	USACE, Garrison Dam/Lake Sakakawea Project	USACE recommends: The installation of an impervious lined trench, use of a closed loop drilling design, and that all construction take place between August 15th and April 1st.	See Section 3.2.3, Well Pad, for information regarding berm and the use of a pit-less closed-loop drilling system. WPX will construct a berm around the location to contain all hazardous materials.
Straus, D. Arnold	Three Affiliated Tribes	No Comment	
Svoboda, Larry	EPA	No Comment	
Sweeney, Paul	U.S. Department of Agriculture	No Comment	
Truskowski, Brent	EPA	No Comment	
Towner, Jeffrey	USFWS	See attached letter in Appendix D	Recommendations in Appendix D
Whitcalf, Frank	MHA Nation	No Comment	
Williams, Damon	MHA Nation	No Comment	
County Courthouse	Mercer County	No Comment	
Chief Missile Engineer	Minot Air Force Base	No Comment	
Garrison Project Office	USACE	No Comment	
Land Department	Northern Border Pipeline Company	No Comment	
Manager	Xcel Energy	No Comment	
NAGRPA Office	Three Affiliated Tribes	No Comment	
Natural Resources Department	Three Affiliated Tribes	No Comment	
Hall, Tex	Three Affiliated Tribes	No Comment	
Manager	Three Affiliated Tribes	No Comment	

6.0 LIST OF PREPARERS

An interdisciplinary team contributed to this document according to guidance provided in Part 1502.6 of Council on Environmental Quality regulations. This document was drafted by SWCA under the direction of the BIA. Information was compiled from various sources within SWCA.

SWCA Environmental Consultants

- Sarah Ruffo, Environmental Specialist
  Prepared the EA.
- Courtney Lafferty, Environmental Specialist
  Prepared the scoping letters and conducted natural resource surveys for the well pad and utility corridor.
- Courtney Lafferty, Environmental Specialist
  Conducted natural resource surveys for the well pad and utility corridor.
- Damien Reinhart, Assistant Project Manager/Archaeologist
  Reviewed the cultural resource report and assisted with cultural resource section.
- Chandler Herson, Archaeologist
  Conducted cultural resource surveys for the well pad and utility corridor and assisted with the preparation of the cultural report.
- Cole Wander, Archaeologist
  Conducted cultural resource surveys for the well pad and utility corridor.
- Adam Leroy, Archaeologist
  Assisted with the preparation of the cultural report.
- Scott Yost, Archaeologist
  Assisted with the preparation of the cultural report.
- Travis Genty, GIS Specialist
  Created maps and spatially derived data.
- Michael Madson, Project Manager
  Reviewed document for content and adequacy.
- Richard Wadleigh, NEPA Expert
  Reviewed document for content and adequacy.

WPX Energy Williston, LLC

- Mike Cook, Sr. Regulatory Specialist
  Reviewed document for content and adequacy.

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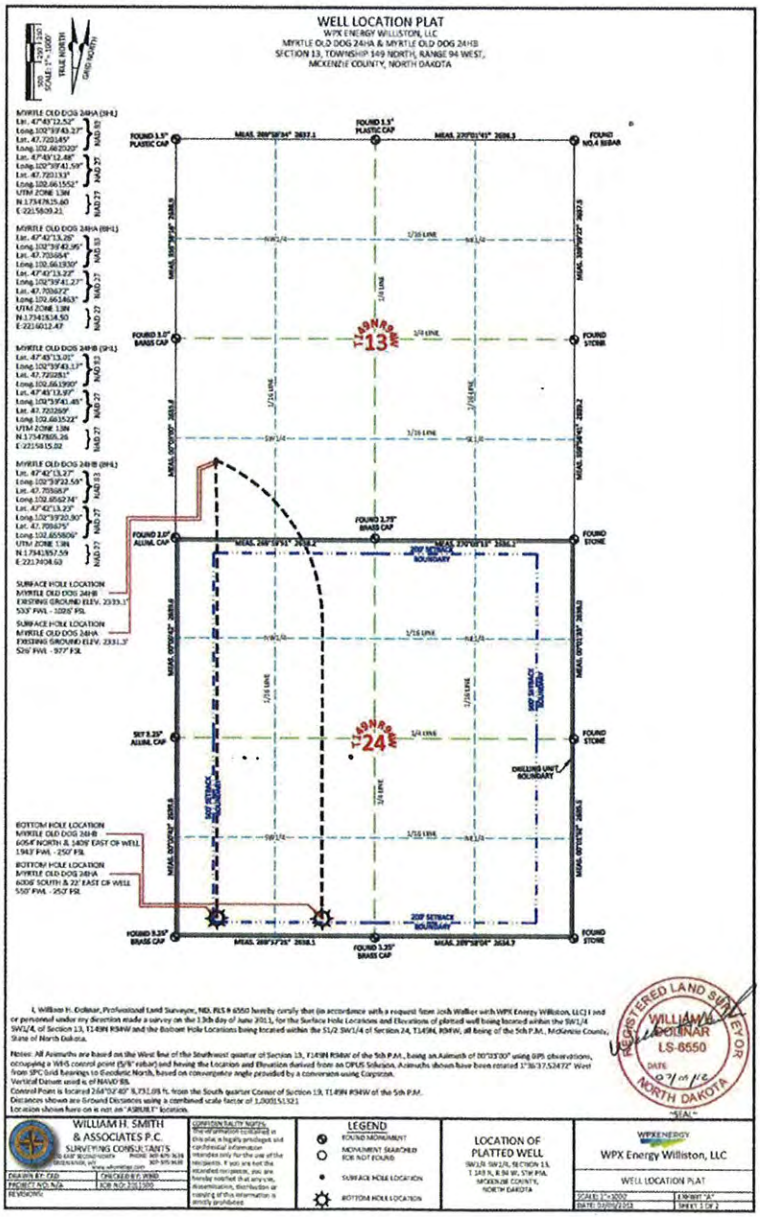
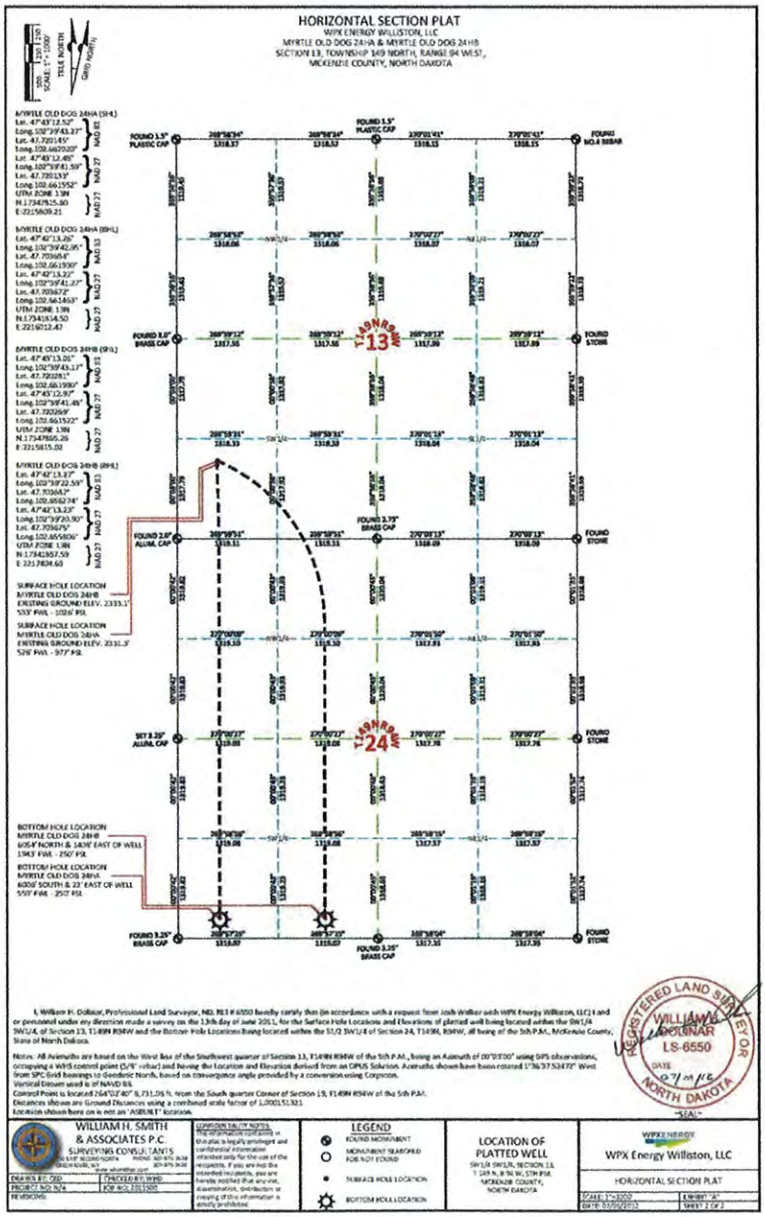
8.0 ACRONYMS

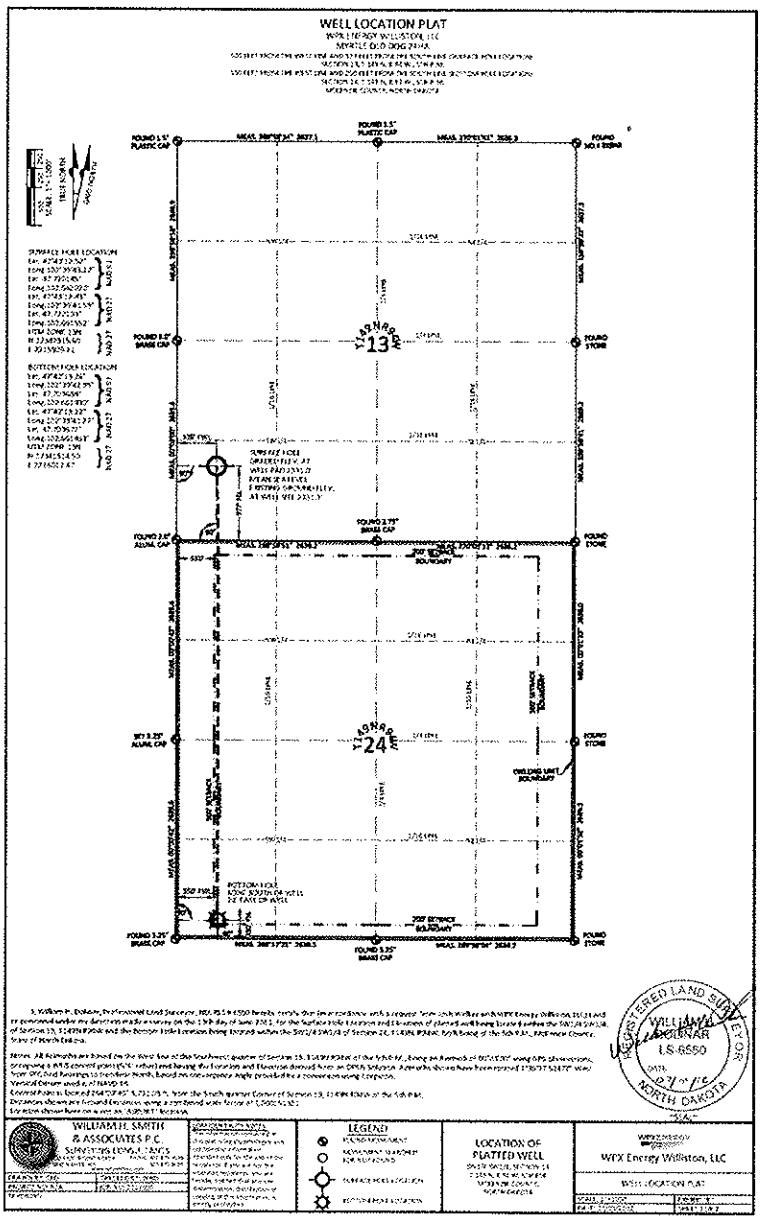
°F	degrees Fahrenheit
APD	Application for Permit to Drill
AQI	Air Quality Index
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CFR	Code of Federal Regulations
CH_4	methane
CIAA	cumulative impact analysis area
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
EA	environmental assessment
EJ	Environmental Justice
EPA	Environmental Protection Agency
EPS	Economic Profile System
ESA	Endangered Species Act
GHG	greenhouse gas
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HF	hydraulic fracturing
HUC	hydrologic unit code
IPCC	Intergovernmental Panel on Climate Change
MBTA	Migratory Bird Treaty Act
MHA Nation	Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
NAAQS	national ambient air quality standards
N_2O	nitrous oxide
NDDA	North Dakota Department of Agriculture
NDDH	North Dakota Department of Health
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
NRCS	Natural Resources Conservation Service
O_3	ozone
PM	particulate matter
ROW	right-of-way
SO_2	sulfur dioxide
SWCA	SWCA Environmental Consultants
THPO	Tribal Historic Preservation Officer
TRNP	Theodore Roosevelt National Park
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

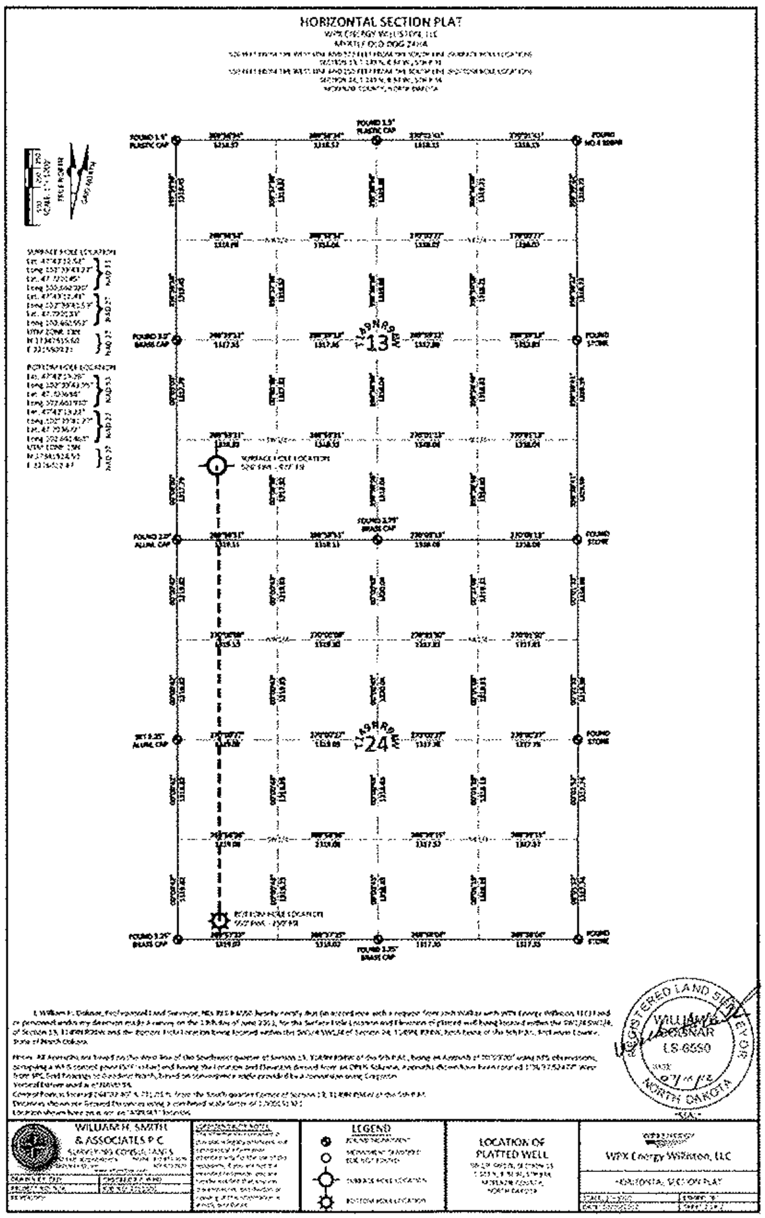
APPENDIX A

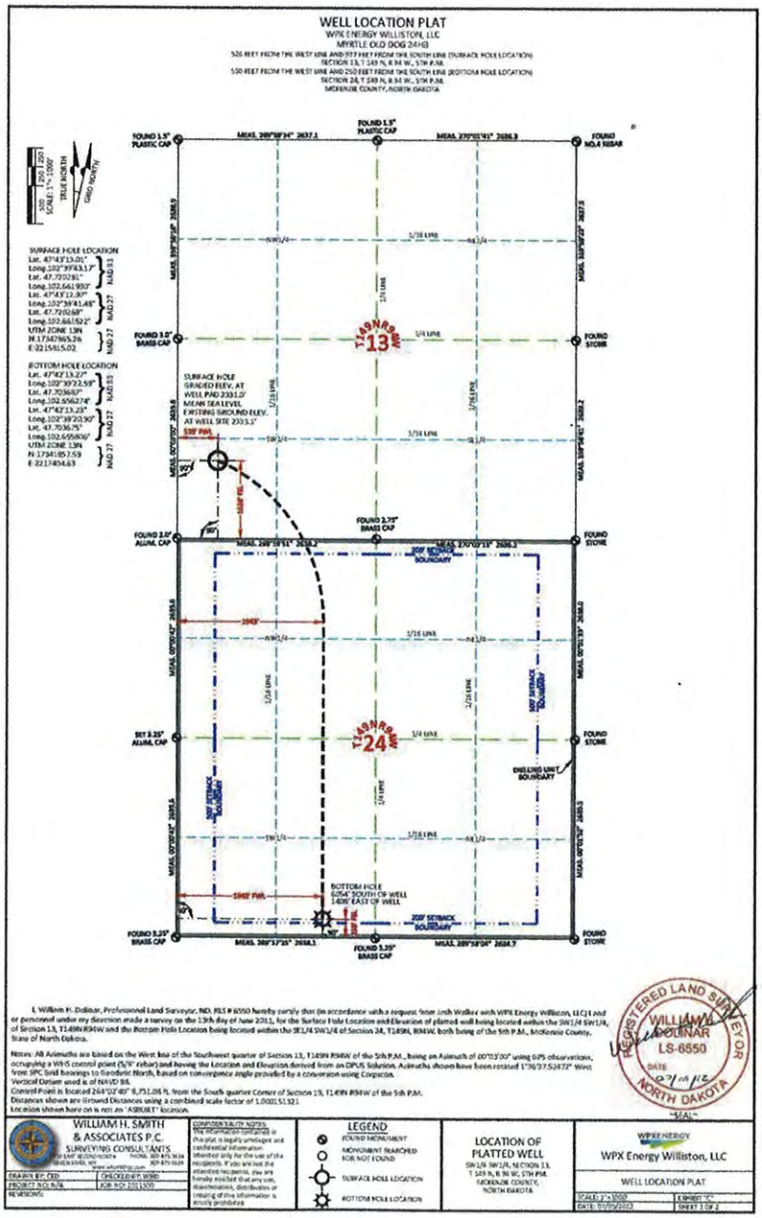
Construction Schematics (Plats) for the Myrtle Old Dog #24H Well Pad and Utility Corridor (Received 08/07/12)

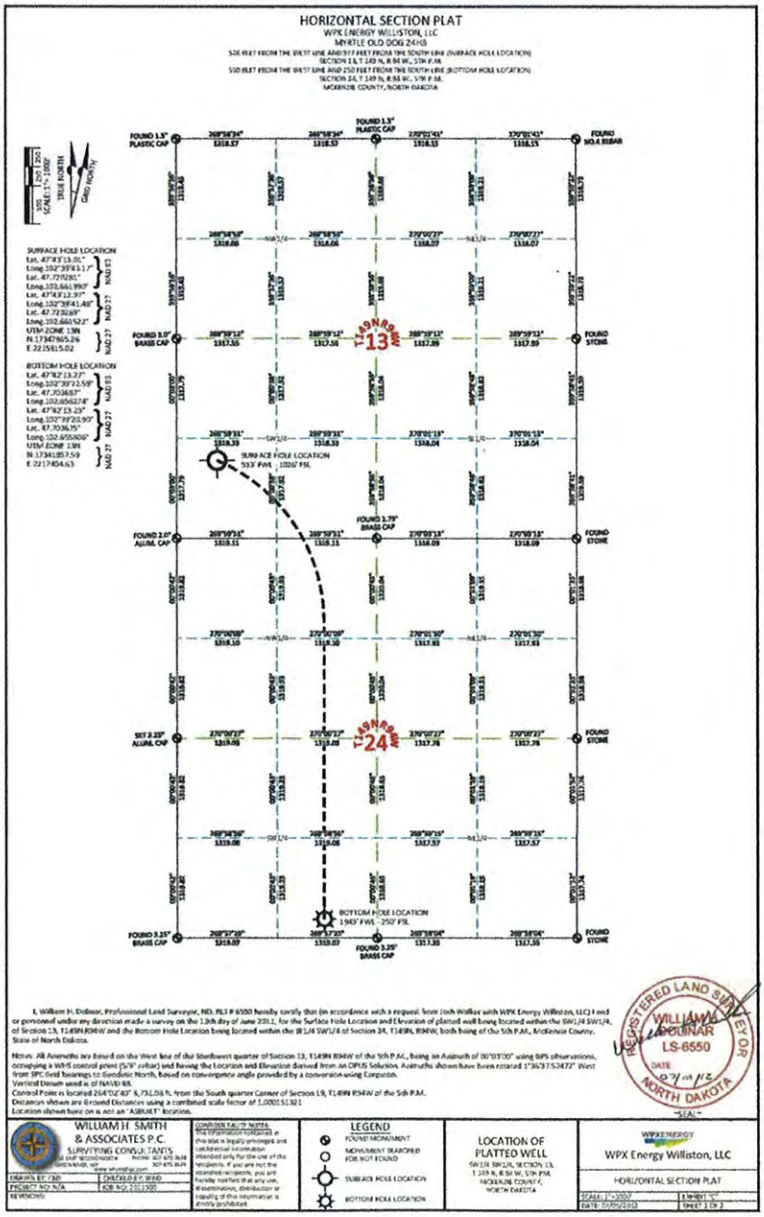

WELL LOCATION PLAT
WPX ENERGY WILLISTON, LLC
MYRTLE OLD DOG 24HA & MYRTLE OLD DOG 24HB
SECTION 13, TOWNSHIP 149 NORTH, RANGE 94 WEST,
MCKENZIE COUNTY, NORTH DAKOTA
T149NR94W 13
T149NR94W 24
SURFACE HOLE LOCATION
MYRTLE OLD DOG 24HB
EXISTING GROUND ELEV. 2333.1'
530' FWL - 1026' FSL
SURFACE HOLE LOCATION
MYRTLE OLD DOG 24HA
EXISTING GROUND ELEV. 2331.3'
526' FWL - 977' FSL
BOTTOM HOLE LOCATION
MYRTLE OLD DOG 24HB
605' NORTH & 1405' EAST OF WELL
1947' FWL - 250' FSL
BOTTOM HOLE LOCATION
MYRTLE OLD DOG 24HA
600' SOUTH & 22' EAST OF WELL
550' FWL - 250' FSL
200' SETBACK BOUNDARY
DRILLING UNIT BOUNDARY
REGISTERED LAND SURVEYOR
WILLIAM H. DOLINAR
LS-6550
NORTH DAKOTA
SEAL
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
LEGEND
FOUND MONUMENT
MONUMENT SEARCHED FOR NOT FOUND
SURFACE HOLE LOCATION
BOTTOM HOLE LOCATION
LOCATION OF PLATTED WELL
SW1/4 SW1/4, SECTION 13, T 149 N, R 94 W, 5TH PM, MCKENZIE COUNTY, NORTH DAKOTA
WPX Energy Williston, LLC
WELL LOCATION PLAT


HORIZONTAL SECTION PLAT
WPX ENERGY WILLISTON, LLC
MYRTLE OLD DOG 24HA & MYRTLE OLD DOG 24HB
SECTION 13, TOWNSHIP 149 NORTH, RANGE 94 WEST,
MCKENZIE COUNTY, NORTH DAKOTA
SURFACE HOLE LOCATION
MYRTLE OLD DOG 24HB
EXISTING GROUND ELEV. 2333.1'
533' FWL - 1026' FSL
SURFACE HOLE LOCATION
MYRTLE OLD DOG 24HA
EXISTING GROUND ELEV. 2331.3'
528' FWL - 977' FSL
BOTTOM HOLE LOCATION
MYRTLE OLD DOG 24HB
605.4' NORTH & 140' EAST OF WELL
1943' FWL - 250' FSL
BOTTOM HOLE LOCATION
MYRTLE OLD DOG 24HA
6000' SOUTH & 23' EAST OF WELL
559' FWL - 257' FSL
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
LEGEND
LOCATION OF PLATTED WELL
WPX Energy Williston, LLC
HORIZONTAL SECTION PLAT


WELL LOCATION PLAT
MYRTLE OLD DOG 24H-A
SECTION 13
SECTION 24
WILLIAM H. SMITH & ASSOCIATES P.C.
LEGEND
LOCATION OF PLATTED WELL
WPX Energy Williston, LLC
WELL LOCATION PLAT


HORIZONTAL SECTION PLAT
13
24
LEGEND
WILLIAM H. SMITH
& ASSOCIATES P.C.
LOCATION OF
PLATTED WELL
WPX Energy Williston, LLC


WELL LOCATION PLAT
WPX ENERGY WILLISTON, LLC
MYRTLE OLD DOG 24HB
T.149N.R.94W.
13
24
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
LEGEND
LOCATION OF PLATTED WELL
WPX Energy Williston, LLC
WELL LOCATION PLAT


HORIZONTAL SECTION PLAT
WPX ENERGY WILLISTON, LLC
MYRTLE OLD DOG 24HS
526 FEET FROM THE WEST LINE AND 977 FEET FROM THE SOUTH LINE (SURFACE HOLE LOCATION)
SECTION 13, T 149 N, R 94 W., 5TH P.M.
550 FEET FROM THE WEST LINE AND 250 FEET FROM THE SOUTH LINE (BOTTOM HOLE LOCATION)
SECTION 24, T 149 N, R 94 W., 5TH P.M.
MCKENZIE COUNTY, NORTH DAKOTA
SURFACE HOLE LOCATION
BOTTOM HOLE LOCATION
SURFACE HOLE LOCATION
933' FWL - 1202' FSL
BOTTOM HOLE LOCATION
1943' FWL - 250' FSL
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
LEGEND
FOUND MONUMENT
MONUMENT SEARCHED FOR NOT FOUND
SURFACE HOLE LOCATION
BOTTOM HOLE LOCATION
LOCATION OF PLATTED WELL
SW1/4 SW1/4, SECTION 13, T 149 N, R 94 W, 5TH P.M.
MCKENZIE COUNTY, NORTH DAKOTA
WPX Energy Williston, LLC
HORIZONTAL SECTION PLAT

WELL COORDINATE LIST
WPX ENERGY WILLISTON, LLC
MYRTLE OLD DOG 24HA
MYRTLE OLD DOG 24HB

	Geographic NAD 83				Geographic NAD 27				UTM Zone 13 NAD 27					
	Deg. Min. Decimal Seconds		Decimal Degrees		Deg. Min. Decimal Seconds		Decimal Degrees							
	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Northing	Easting	Footage	SEC.	TWN.	RNG.
MYRTLE OLD DOG 24HA (SHL)	47°43'12.57"	102°39'43.27"	47.720145°	102.662020°	47°43'12.48"	102°39'41.59"	47.720133°	102.661552°	17347815.60	2215809.21	526' FWL 977' FSL	13	149N	94W
MYRTLE OLD DOG 24HA (BHL)	47°42'13.26"	102°39'42.95"	47.703684°	102.661930°	47°42'13.22"	102°39'41.27"	47.7036 72°	102.661463°	17341814.50	2216012.47	550' FWL 250' FSL	24	149N	94W
MYRTLE OLD DOG 24HB (SHL)	47°43'13.01"	102°39'43.17"	47.720281°	102.661990°	47°43'12.97"	102°39'41.48"	47.720269°	102.661522°	17347865.26	2215815.02	533' FWL 1026' FSL	13	149N	94W
MYRTLE OLD DOG 24HB (BHL)	47°42'13.27"	102°39'22.59"	47.703687°	102.656274°	47°42'13.23"	102°39'20.90"	47.703675°	102.655806°	17341857.59	2217404.63	1943' FWL 250' FSL	24	149N	94W

WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
150 EAST SECOND NORTH PHONE: 307-875-3638
GREEN RIVER, WY 307-875-3639
www.whsmithpc.com

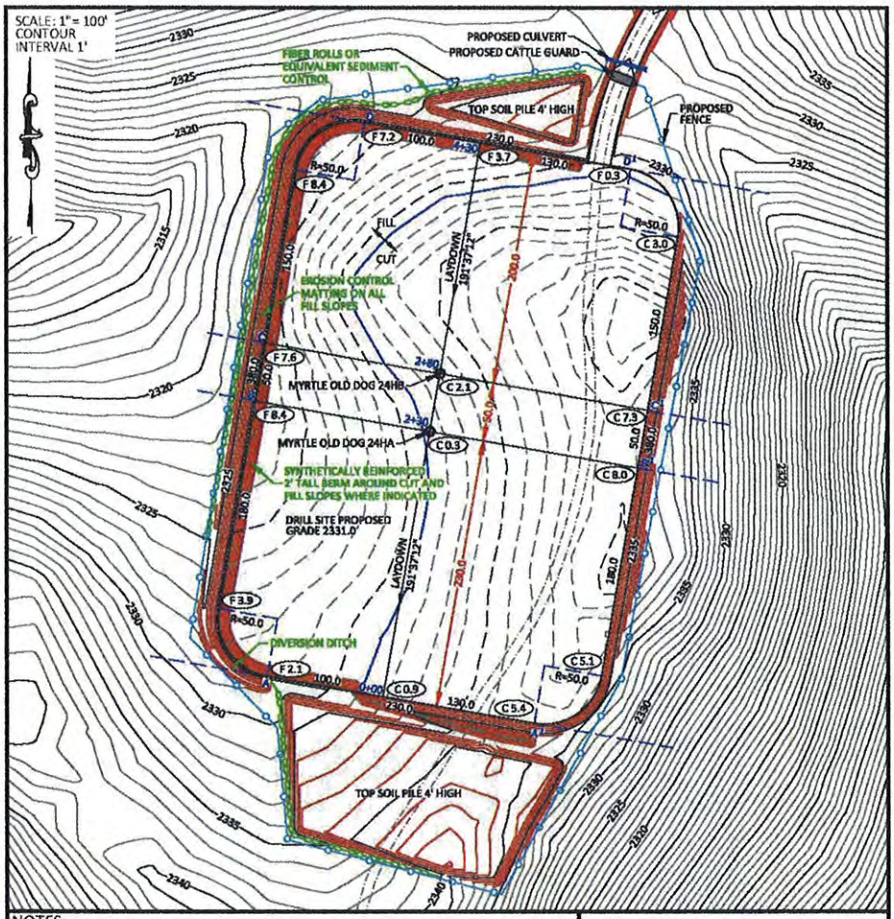
DRAWN BY: CED | CHECKED BY: WHD
PROJECT NO: N/A | JOB NO: 2011500
REVISIONS:

LOCATION
MYRTLE OLD DOG 24HA & 24HB
SW1/4 SW1/4, SECTION 13, T 149 N, R 94 W, 5TH P.M.
MCKENZIE COUNTY, NORTH DAKOTA

WPXENERGY
WPX Energy Williston, LLC

WELL COORDINATE LIST

DATE: 07/05/2012 | SHEET 1 OF 1



NOTES:

- All Fill/Embankment areas shall be compacted to at least 95% of maximum density as determined by ASTM D689 (Standard Proctor).
- Elevation of pad shown on plans are to constructed pad without final gravel padding placement. Depth, volume, and padding material to be determined by operator.
- The information contained in this plat is legally privileged and confidential information intended only for the use of the recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

WPXENERGY

WPX Energy Williston, LLC

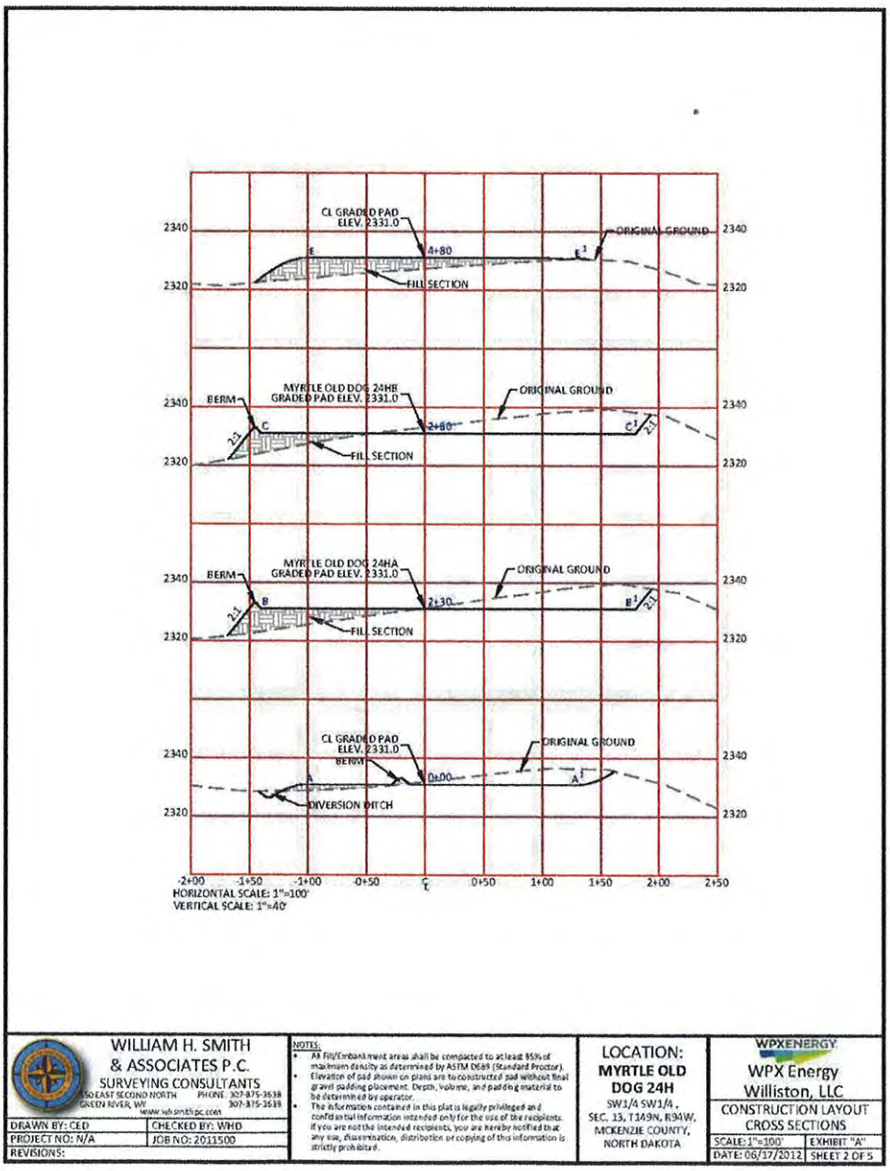
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
550 EAST SECOND NORTH PHONE: 307-875-3638
GREEN RIVER, WY 307-875-3639
www.whsmithpc.com

PAD CONSTRUCTION DATA	
CUT SLOPE:	2:1
FILL SLOPE:	2:1
TOTAL CUT:	19,489 CU. YDS.
TOTAL FILL +30% SHRINK:	15,045 CU. YDS.
TOP SOIL AT 8"	4,381 CU. YDS.
SPOIL	62 CU. YDS.
PAD SURFACE AREA	3.59 ACRES
PAD ROW ACREAGE (FENCED AREA)	5.19 ACRES

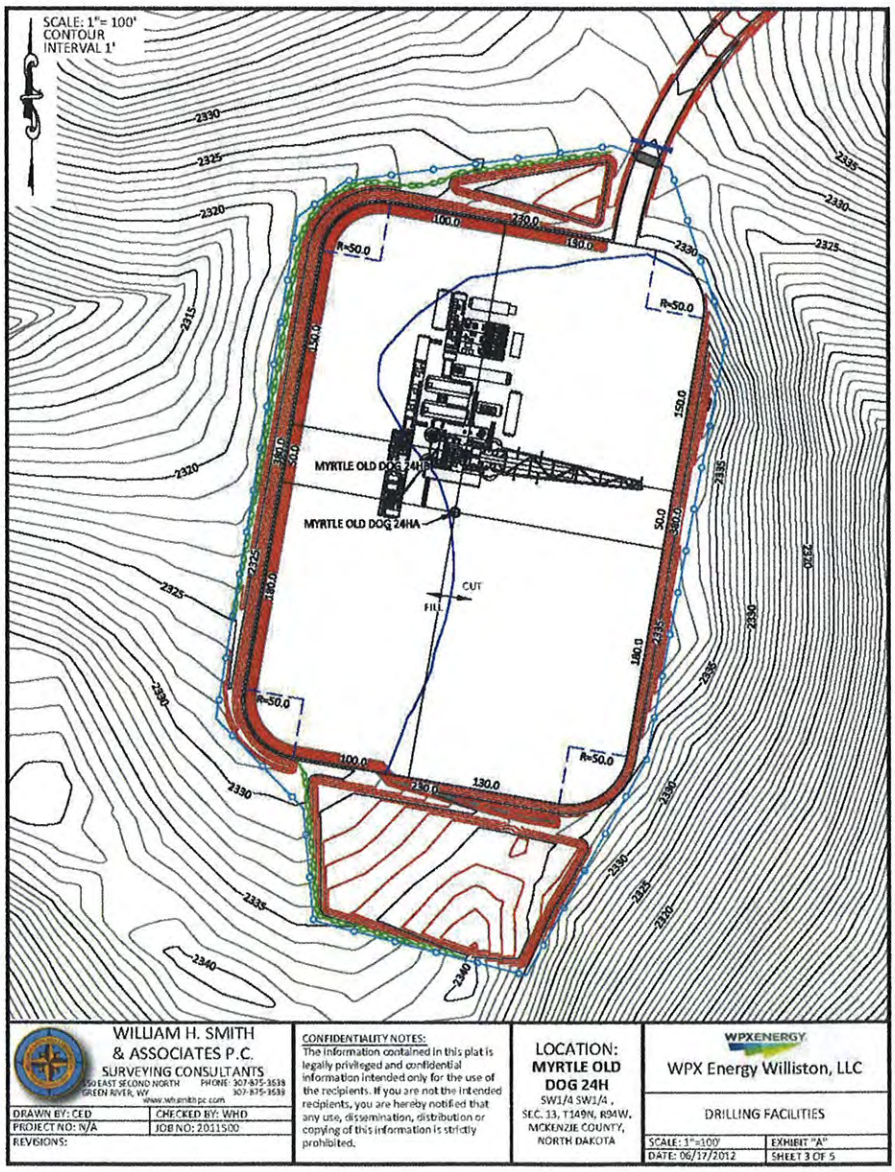
LOCATION:
MYRTLE OLD DOG 24H
SW1/4 SW1/4 , SEC. 13, T149N, R94W,
MCKENZIE COUNTY, NORTH DAKOTA

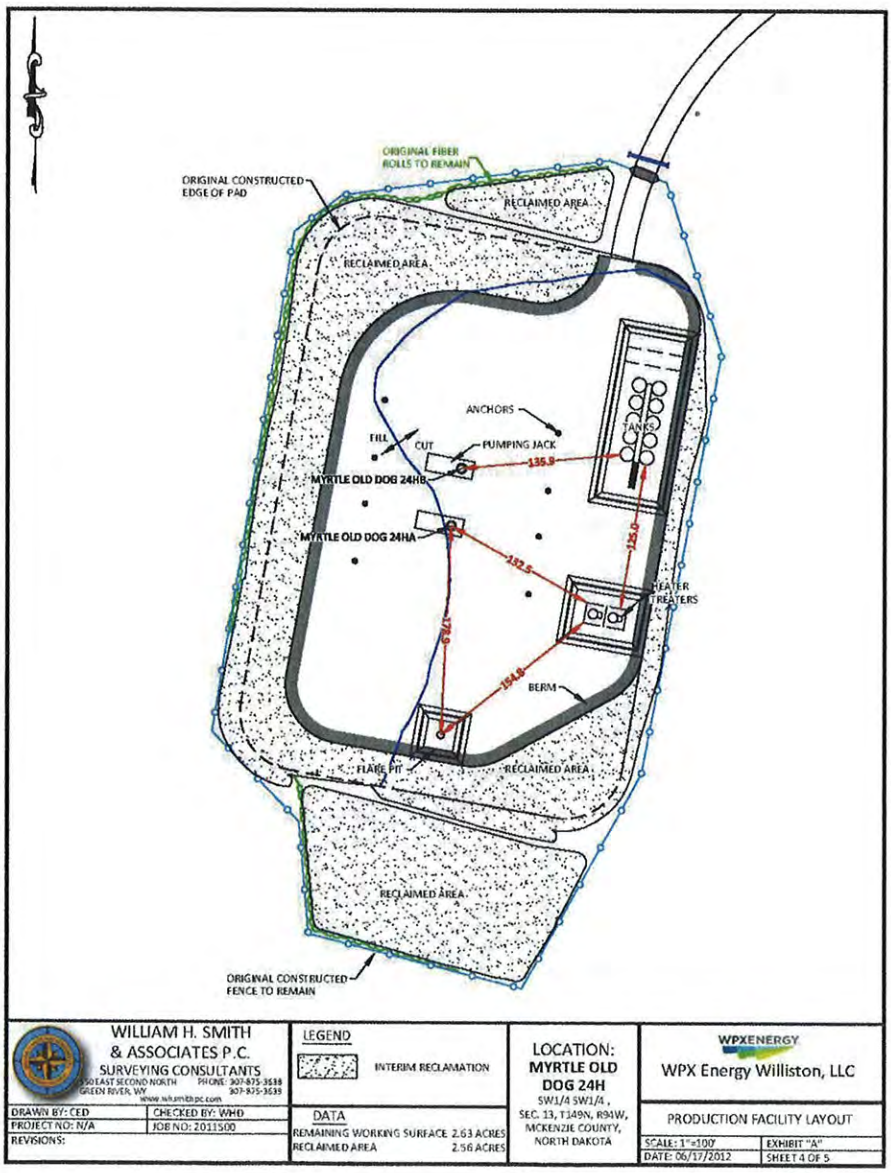
FOOTAGES				
24HA	526' FWL	977' FSL	24HB	533' FWL 1026' FSL

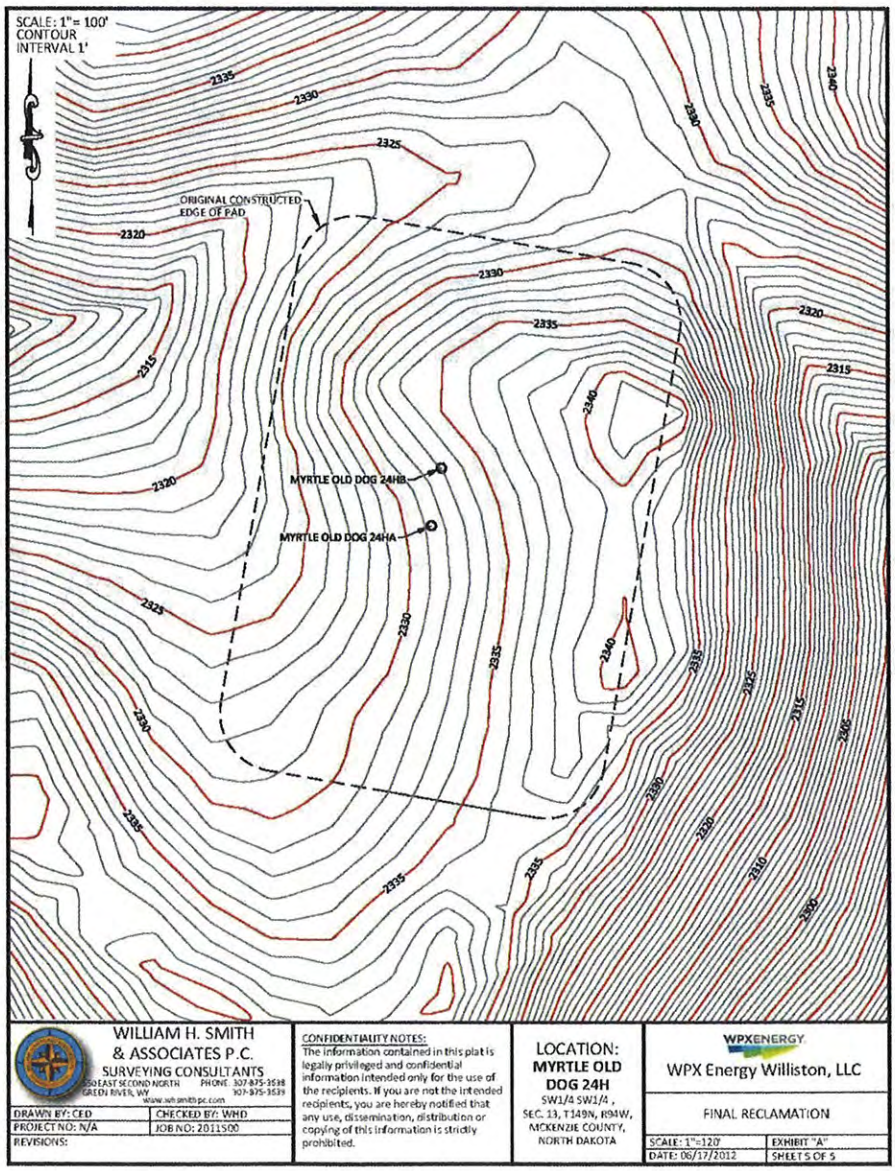
DRAWN BY: CED	CHECKED BY: WHD
PROJECT NO: PDW	JOB NO: 2011500
REVISIONS: REVISED CONSTRUCTION DATA TABLE 8/6/2012.	
SCALE: 1"= 100'	EXHIBIT "A"
DATE: 06/17/2012	SHEET 1 OF 5

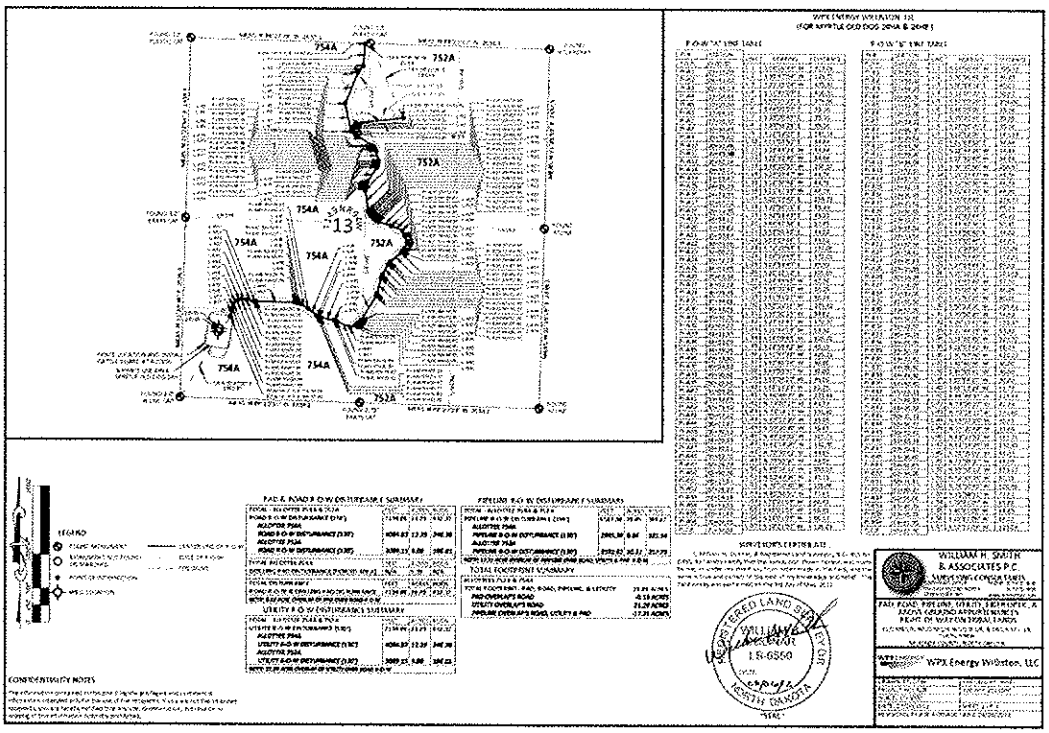


WILLIAM H. SMITH & ASSOCIATES P.C. SURVEYING CONSULTANTS 150 EAST SECOND NORTH GREEN RIVER, WY PHONE 307-875-3638 307-875-3639 www.whsmithpc.com	NOTES: • All Fill/Embankment areas shall be compacted to at least 95% of maximum density as determined by ASTM D698 (Standard Proctor). • Elevation of pad shown on plans are to constructed pad without final gravel padding placement. Depth, volume, and padding material to be determined by operator. • The information contained in this plat is legally privileged and confidential information intended only for the use of the recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.	LOCATION: **MYRTLE OLD DOG 24H** SW1/4 SW1/4 , SEC. 13, T149N, R94W, MCKENZIE COUNTY, NORTH DAKOTA	WPXENERGY WPX Energy Williston, LLC
DRAWN BY: CED / CHECKED BY: WHD			CONSTRUCTION LAYOUT CROSS SECTIONS
PROJECT NO: N/A / JOB NO: 2011500			SCALE: 1"=100' / EXHIBIT "A"
REVISIONS:			DATE: 06/17/2012 / SHEET 2 OF 5


SCALE: 1"= 100'
CONTOUR INTERVAL 1'
MYRTLE OLD DOG 24HB
MYRTLE OLD DOG 24HA
CUT
FILL
R=50.0
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
550 EAST SECOND NORTH
GREEN RIVER, WY
PHONE 307-875-3538
307-875-3539
www.whsmith-pc.com
DRAWN BY: CED
CHECKED BY: WHD
PROJECT NO: N/A
JOB NO: 2011500
REVISIONS:
CONFIDENTIALITY NOTES:
The information contained in this plat is legally privileged and confidential information intended only for the use of the recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.
LOCATION:
MYRTLE OLD DOG 24H
SW1/4 SW1/4 ,
SEC. 13, T149N, R94W,
MCKENZIE COUNTY,
NORTH DAKOTA
WPXENERGY
WPX Energy Williston, LLC
DRILLING FACILITIES
SCALE: 1"=100'
EXHIBIT "A"
DATE: 06/17/2012
SHEET 3 OF 5


ORIGINAL FIBER ROLLS TO REMAIN
ORIGINAL CONSTRUCTED EDGE OF PAD
RECLAIMED AREA
RECLAIMED AREA
ANCHORS
FILL
CUT
PUMPING JACK
135.8
TANKS
MYRTLE OLD DOG 24HB
MYRTLE OLD DOG 24HA
125.0
132.5
HEATER TREATERS
178.9
154.8
BERM
FLARE PIT
RECLAIMED AREA
RECLAIMED AREA
ORIGINAL CONSTRUCTED FENCE TO REMAIN
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
520 EAST SECOND NORTH PHONE: 307-875-3538
GREEN RIVER, WY 307-875-3539
www.whsmithpc.com
DRAWN BY: CED
CHECKED BY: WHD
PROJECT NO: N/A
JOB NO: 2011500
REVISIONS:
LEGEND
INTERIM RECLAMATION
DATA
REMAINING WORKING SURFACE 2.63 ACRES
RECLAIMED AREA 2.56 ACRES
LOCATION:
MYRTLE OLD DOG 24H
SW1/4 SW1/4 ,
SEC. 13, T149N, R94W,
MCKENZIE COUNTY,
NORTH DAKOTA
WPXENERGY
WPX Energy Williston, LLC
PRODUCTION FACILITY LAYOUT
SCALE: 1"=100'
EXHIBIT "A"
DATE: 06/17/2012
SHEET 4 OF 5


SCALE: 1"= 100'
CONTOUR INTERVAL 1'
ORIGINAL CONSTRUCTED EDGE OF PAD
MYRTLE OLD DOG 24HB
MYRTLE OLD DOG 24HA
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
1550 EAST SECOND NORTH
GREEN RIVER, WY
PHONE 307-875-3538
307-875-3539
www.whsmithpc.com
DRAWN BY: CED
CHECKED BY: WHD
PROJECT NO: N/A
JOB NO: 2011500
REVISIONS:
CONFIDENTIALITY NOTES:
The information contained in this plat is legally privileged and confidential information intended only for the use of the recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.
LOCATION:
MYRTLE OLD DOG 24H
SW1/4 SW1/4 ,
SEC. 13, T149N, R94W,
MCKENZIE COUNTY,
NORTH DAKOTA
WPXENERGY
WPX Energy Williston, LLC
FINAL RECLAMATION
SCALE: 1"=120'
EXHIBIT "A"
DATE: 06/17/2012
SHEET 5 OF 5


754A
752A
753A
754A
752A
754A
754A
754A
754A
753A
13
WILLIAM H. SMITH & ASSOCIATES P.C.
WPX Energy Williston, LLC

WPX ENERGY WILLISTON, LLC
PAD, ROAD, UTILITY, FIBER OPTIC, & ABOVE GROUND APPURTENANCES
RIGHT-OF-WAY "A" ON TRIBAL LANDS
(FOR MYRTLE OLD DOG 24HA & 24HB)

A strip of land located in the East half (E1/2) of the Northwest quarter (NW1/4), in the Southwest quarter (SW1/4) of the Northeast quarter (NE1/4), in the West half (W1/2) Southeast quarter (SE1/4), and in the Southwest quarter (SW1/4) of Section 13, Township 149 North, Range 94 West, McKenzie County, State of North Dakota, being one hundred thirty feet (130') in width, lying sixty five feet (65') on each side of the following described center line:

Commencing at the North Quarter Corner of Section 13, Township 149 North, Range 94 West (Found 1.5" Plastic Cap); thence South 79°45'38" West a distance of 81.54 feet, to the POINT OF BEGINNING;
thence South 04°26'49" West a distance of 319.05 feet (sta. 03+19.05); thence South 36°47'54" West a distance of 123.77 feet (sta. 04+42.82);
thence South 22°15'04" West a distance of 495.31 feet (sta. 09+38.13); thence South 11°39'03" East a distance of 416.31 feet (sta. 13+54.44);
thence South 57°09'29" East a distance of 374.56 feet (sta. 17+29.00); thence South 46°05'09" East a distance of 35.16 feet (sta. 17+64.16);
thence South 35°00'49" East a distance of 35.16 feet (sta. 17+99.32); thence South 23°56'28" East a distance of 35.16 feet (sta. 18+34.48);
thence South 12°52'08" East a distance of 141.14 feet (sta. 19+75.62); thence South 01°03'52" East a distance of 34.84 feet (sta. 20+10.46);
thence South 10°44'24" West a distance of 34.84 feet (sta. 20+45.30); thence South 22°32'40" West a distance of 34.84 feet (sta. 20+80.14);
thence South 34°20'56" West a distance of 158.57 feet (sta. 23+38.71); thence South 23°29'47" West a distance of 44.76 feet (sta. 23+83.47);
thence South 12°38'38" West a distance of 44.76 feet (sta. 24+28.23), thence South 01°47'29" West a distance of 44.76 feet (sta. 24+72.99),
thence South 09°03'40" East a distance of 294.73 feet (sta. 27+67.72); thence South 20°58'18" East a distance of 45.23 feet (sta. 28+12.95),
thence South 32°52'43" East a distance of 45.22 feet (sta. 28+58.17); thence South 44°47'34" East a distance of 57.45 feet (sta. 29+15.62);
thence South 58°58'40" East a distance of 44.02 feet (sta. 29+59.64); thence South 63°09'45" East a distance of 44.02 feet (sta. 30+03.66);
thence South 72°20'53" East a distance of 197.06 feet (sta. 32+00.72); thence South 68°53'49" East a distance of 172.01 feet (sta. 33+77.73);
thence South 23°53'49" East a distance of 89.92 feet (sta. 34+62.65); thence South 20°10'12" East a distance of 101.69 feet (sta. 35+64.34);
thence South 24°49'48" West a distance of 97.76 feet (sta. 36+62.10); thence South 33°20'38" West a distance of 36.28 feet (sta. 36+98.38);
thence South 41°51'27" West a distance of 36.28 feet (sta. 37+34.66); thence South 50°22'16" West a distance of 209.42 feet (sta. 39+44.08);
thence South 39°50'29" West a distance of 54.62 feet (sta. 39+98.70); thence South 29°18'41" West a distance of 170.37 feet (sta. 41+69.07),
thence South 21°44'13" West a distance of 53.32 feet (sta. 42+22.39), thence South 14°09'45" West a distance of 229.70 feet (sta. 44+52.09);
thence South 22°53'42" West a distance of 46.19 feet (sta. 44+98.28), thence South 31°37'38" West a distance of 420.22 feet (sta. 49+18.50);
thence South 40°46'34" West a distance of 36.00 feet (sta. 49+54.50); thence South 49°55'31" West a distance of 36.00 feet (sta. 49+90.50);
thence South 59°04'27" West a distance of 36.00 feet (sta. 50+26.50), thence South 68°13'23" West a distance of 82.75 feet (sta. 51+09.25);
thence North 66°46'37" West a distance of 223.44 feet (sta. 53+32.69); thence North 75°00'27" West a distance of 42.73 feet (sta. 53+75.42);
thence North 79°14'17" West a distance of 191.80 feet (sta. 55+67.22); thence North 69°17'29" West a distance of 35.65 feet (sta. 56+02.87);
thence North 59°20'40" West a distance of 35.65 feet (sta. 56+38.52); thence North 49°23'52" West a distance of 167.71 feet (sta. 58+06.23);
thence North 61°14'26" West a distance of 132.38 feet (sta. 59+38.61); thence North 70°35'02" West a distance of 44.09 feet (sta. 59+82.70);
thence North 79°55'37" West a distance of 44.09 feet (sta. 60+26.79); thence North 89°16'12" West a distance of 553.57 feet (sta. 65+80.36);
thence North 82°43'26" West a distance of 37.15 feet (sta. 66+17.51); thence North 76°10'40" West a distance of 108.86 feet (sta. 67+26.37);
thence North 85°58'51" West a distance of 77.81 feet (sta. 68+04.18); thence South 70°01'09" West a distance of 68.85 feet (sta. 68+73.03);
thence South 46°01'09" West a distance of 68.85 feet (sta. 69+41.88); thence South 22°01'09" West a distance of 66.17 feet (sta. 70+08.05),
thence South 10°01'09" West a distance of 126.03 feet (sta. 71+34.08); to the POINT OF ENDING; said ending point being located North 31°47'00" East a distance of 1,392.30 feet from the Southwest corner of Section 13, Township 149 North, Range 94 West (Found 2.0" Alum. Cap).

Said centerline is 7,134.08 feet or 432.37 rods and contains 21.29 Acres more or less.

Bearings are grid bearings based on the North Dakota State Plane Coordinate System North Zone NAD 83 from GPS observations, occupying a WHS control point (5/8" rebar) and having the Location and Elevation derived from an OPUS Solution.
Control Point is located North 56°09'12" East a distance of 10,662.36 ft. from the Southwest Corner of Section 13, T149N R94W of the 5th P.M.

Distances shown are Ground Distances using a combined scale factor of 1.000151321.

Location shown here on is not an 'ASBUILT' location.

ROW "A" LEGAL DESCRIPTION	
DRAWN BY: DTW	CHECKED BY: WHD
PROJECT NO: N/A	JOB NO: 2013569
SCALE: N/A	
DATE: 07/09/2012	SHEET 2 OF 2

WPX ENERGY WILLISTON, LLC
PIPELINE RIGHT-OF-WAY "B" ON TRIBAL LANDS
(FOR MYRTLE OLD DOG 24HA & 24HB)

A strip of land located in the East half (E1/2) of the Northwest quarter (NW1/4), in the West half (W1/2) of the Northeast quarter(NE1/4), in the West half (W1/2) Southeast quarter(SE1/4), and in the Southwest quarter (SW1/4) of Section 13, Township 149 North, Range 94 West, McKenzie County, State of North Dakota, being one hundred feet (100') in width, lying fifty feet (50') on each side of the following described center line, also being one hundred thirty feet (130') in width, lying sixty five feet (65') on each side between Sta. 08+84.99 and Sta. 65+87.98 of the following described centerline:

Commencing at the North Quarter Corner of Section 13, Township 149 North, Range 94 West (Found 1.5" Plastic Cap); thence South 24°01'24" East a distance of 1,200.01 feet, to the POINT OF BEGINNING of said one hundred foot (100') Right-Of-Way:
thence South 83°56'48" West a distance of 705.93 feet (sta. 07+05.93); thence South 38°56'48" West a distance of 48.29 feet (sta. 07+54.22);
thence South 06°03'12" East a distance of 40.01 feet (sta. 07+94.23); thence South 12°09'29" East a distance of 90.67 feet (sta. 08+84.90), said point also being the beginning of said one hundred thirty foot (130') Right-Of-Way;
thence South 57°09'29" East a distance of 288.00 feet (sta. 11+82.90); thence South 46°05'09" East a distance of 35.16 feet (sta. 12+18.06);
thence South 35°00'49" East a distance of 35.16 feet (sta. 12+53.22); thence South 23°56'28" East a distance of 35.16 feet (sta. 12+88.38);
thence South 12°52'08" East a distance of 141.14 feet (sta. 14+29.52); thence South 01°03'52" East a distance of 34.84 feet (sta. 14+64.36);
thence South 10°44'24" West a distance of 34.84 feet (sta. 14+99.20), thence South 22°32'40" West a distance of 34.84 feet (sta. 15+34.04);
thence South 34°20'56" West a distance of 258.57 feet (sta. 17+92.61); thence South 23°29'47" West a distance of 44.76 feet (sta. 18+37.37);
thence South 12°38'38" West a distance of 44.76 feet (sta. 18+82.13), thence South 01°47'29" West a distance of 44.76 feet (sta. 19+26.89);
thence South 09°03'40" East a distance of 294.73 feet (sta. 22+21.62); thence South 20°55'18" East a distance of 45.23 feet (sta. 22+66.85);
thence South 32°52'43" East a distance of 45.22 feet (sta. 23+12.07), thence South 44°47'34" East a distance of 57.45 feet (sta. 23+69.52),
thence South 53°58'40" East a distance of 44.02 feet (sta. 24+13.54); thence South 63°09'46" East a distance of 44.02 feet (sta. 24+57.56);
thence South 72°20'53" East a distance of 197.06 feet (sta. 26+54.62); thence South 68°53'49" East a distance of 172.01 feet (sta. 28+26.63);
thence South 23°53'49" East a distance of 89.92 feet (sta. 29+16.55); thence South 20°10'12" East a distance of 101.69 feet (sta. 30+18.24),
thence South 24°49'48" West a distance of 97.76 feet (sta. 31+16.00); thence South 33°20'38" West a distance of 36.28 feet (sta. 31+52.28),
thence South 41°51'27" West a distance of 36.28 feet (sta. 31+88.56), thence South 50°22'16" West a distance of 209.42 feet (sta. 33+97.98);
thence South 39°50'29" West a distance of 54.62 feet (sta. 34+52.60); thence South 29°18'41" West a distance of 170.37 feet (sta. 36+22.97);
thence South 21°44'13" West a distance of 53.32 feet (sta. 36+76.29); thence South 14°09'45" West a distance of 229.70 feet (sta. 39+05.99);
thence South 22°53'42" West a distance of 46.19 feet (sta. 39+52.18); thence South 31°37'38" West a distance of 420.22 feet (sta. 43+72.40);
thence South 40°46'34" West a distance of 36.00 feet (sta. 44+08.40); thence South 49°55'31" West a distance of 36.00 feet (sta. 44+44.40);
thence South 59°04'27" West a distance of 36.00 feet (sta. 44+80.40); thence South 68°13'23" West a distance of 82.75 feet (sta. 45+63.15);
thence North 66°46'37" West a distance of 223.44 feet (sta. 47+86.59); thence North 73°00'27" West a distance of 42.73 feet (sta. 48+29.32);
thence North 79°14'17" West a distance of 191.80 feet (sta. 50+21.12); thence North 69°17'29" West a distance of 35.65 feet (sta. 50+56.77);
thence North 59°20'40" West a distance of 35.65 feet (sta. 50+92.42); thence North 49°23'52" West a distance of 167.71 feet (sta. 52+60.13);
thence North 61°14'26" West a distance of 132.38 feet (sta. 53+92.51); thence North 70°35'02" West a distance of 44.09 feet (sta. 54+36.60);
thence North 79°55'37" West a distance of 44.09 feet (sta. 54+80.69); thence North 89°16'12" West a distance of 553.57 feet (sta. 60+34.26);
thence North 82°43'26" West a distance of 37.15 feet (sta. 60+71.41); thence North 76°10'40" West a distance of 108.86 feet (sta. 61+80.27);
thence North 85°58'51" West a distance of 77.81 feet (sta. 62+58.08); thence South 70°01'09" West a distance of 68.85 feet (sta. 63+26.93);
thence South 46°01'09" West a distance of 68.85 feet (sta. 63+95.78); thence South 22°01'09" West a distance of 65.17 feet (sta. 64+61.95);
thence South 10°01'09" West a distance of 126.03 feet (sta. 65+87.98), to the POINT OF ENDING, said ending point being located North 31°47'00" East a distance of 1,392.30 feet from the Southwest corner of Section 13, Township 149 North, Range 94 West (Found 2.0" Alum. Cap).

Said centerline is 6,587.98 feet or 399.27 rods and contains 19.05 Acres more or less.

Bearings are grid bearings based on the North Dakota State Plane Coordinate System North Zone NAD 83 from GPS observations, occupying a WHS control point (5/8" rebar) and having the Location and Elevation derived from an OPUS Solution.
Control Point is located North 56°09'12" East a distance of 10,662.36 ft. from the Southwest Corner of Section 13, T149N R94W of the 5th P.M.

Distances shown are Ground Distances using a combined scale factor of 1.000151321.

Location shown here on is not an "ASBUILT" location.

ROW "B" LEGAL DESCRIPTION	
DRAWN BY: DDV	CHECKED BY: WHB
PROJECT NO: N/A	JOB NO: 20117-50
SCALE: N/A	
DATE: 07/09/2012	SHEET 3 OF 3

WPX ENERGY WILLISTON, LLC
(FOR MYRTLE OLD DOG 24HA & 24HB)
PAD, ROAD, UTILITY, FIBER OPTIC, & ABOVE GROUND APPURTENANCES RIGHT-OF-WAY
SECTION 13, TOWNSHIP 149 NORTH, RANGE 94 WEST, 5TH P.M.
MCKENZIE COUNTY, NORTH DAKOTA

TOTAL PAD & ROAD RIGHT-OF-WAY ON TRIBAL LANDS

Total length of Right-Of-Way is 7134.08 feet or 1.351 miles. Width of Right-Of-Way is 130' (65' perpendicular on each side of the centerline). Contains 21.29 Acres more or less. Total Pad Right-Of-Way Contains 5.19 Acres more or less. Total combined Pad & Road Right-Of-Way contains 26.48 Acres more or less.

TOTAL UTILITY, FIBER OPTIC, & ABOVE GROUND APPURTENANCES RIGHT-OF-WAY ON TRIBAL LANDS

Total length of Right-Of-Way is 7134.08 feet or 1.351 miles. Width of Right-Of-Way is 130' (65' perpendicular on each side of the centerline). Contains 21.29 Acres more or less.

TOTAL PIPELINE RIGHT-OF-WAY ON TRIBAL LANDS

Total length of Right-Of-Way is 6587.98 feet or 1.248 miles. Width of Right-Of-Way is 100' (50' perpendicular on each side of the centerline) and 130' (65' perpendicular on each side of the centerline). Contains 19.05 Acres more or less.

TOTAL DISTURBANCE ON TRIBAL LANDS

Total combined Pad, Road, Pipeline, Utility, Fiber Optic, and Above Ground Appurtenances Right-Of-Way contains 28.09 Acres more or less.

SURVEYOR'S AFFIDAVIT

STATE OF NORTH DAKOTA
COUNTY OF MCKENZIE } ss

William H. Dollnar, being first duly sworn, deposes and states that he is the registered land surveyor for WPX Energy Williston, LLC, that these surveys were made by him (or under his supervision); that he has examined the field notes of the surveys of the pad, road, pipeline, utility, fiber optic and above ground appurtenances right-of-ways as described and shown on this map; that this map was prepared under his direction from said field notes; and that said right-of-ways, 1.351 miles and 1.248 miles in length beginning and ending as shown on this map is accurately represented.

REGISTERED LAND SURVEYOR
WILLIAM H. DOLLNAR
LS-6550
DATE 08/06/12
NORTH DAKOTA

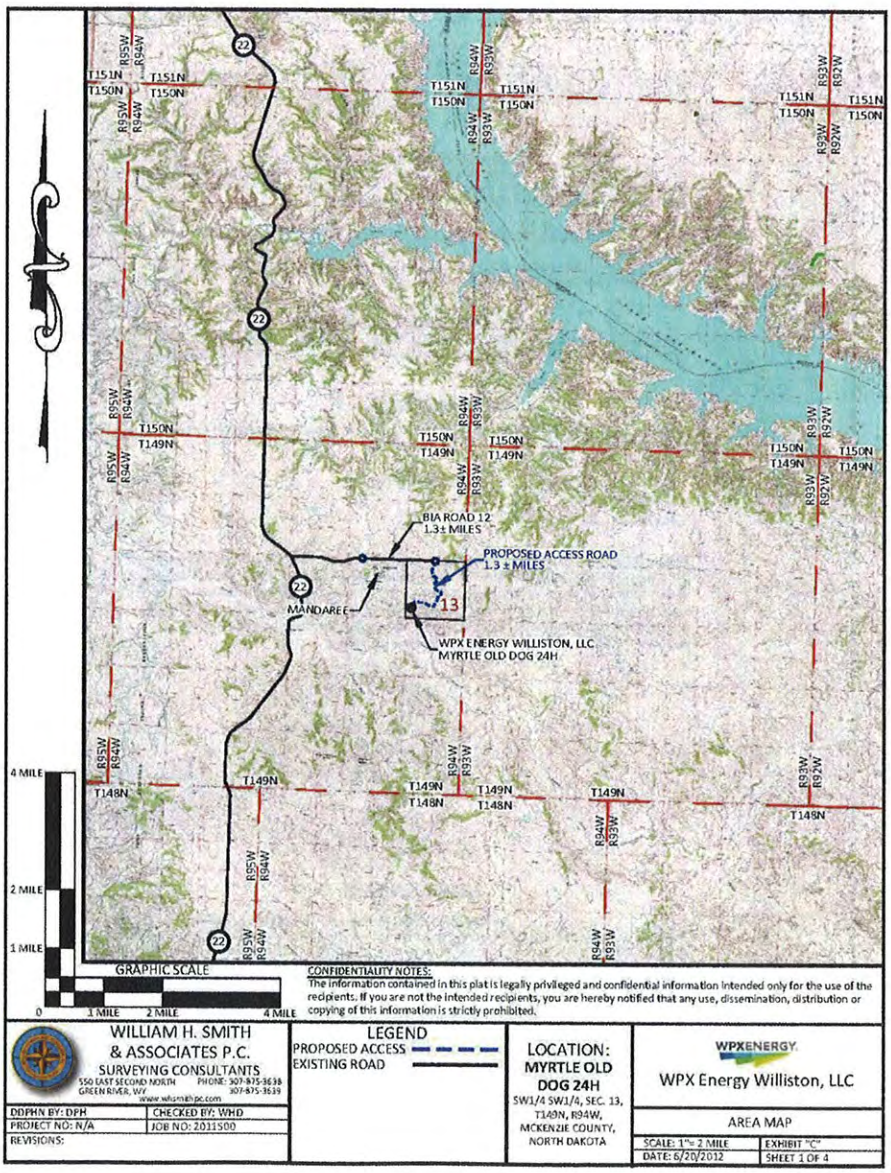
REGISTERED LAND SURVEYOR
REGISTRATION NO. 6550
STATE OF NORTH DAKOTA

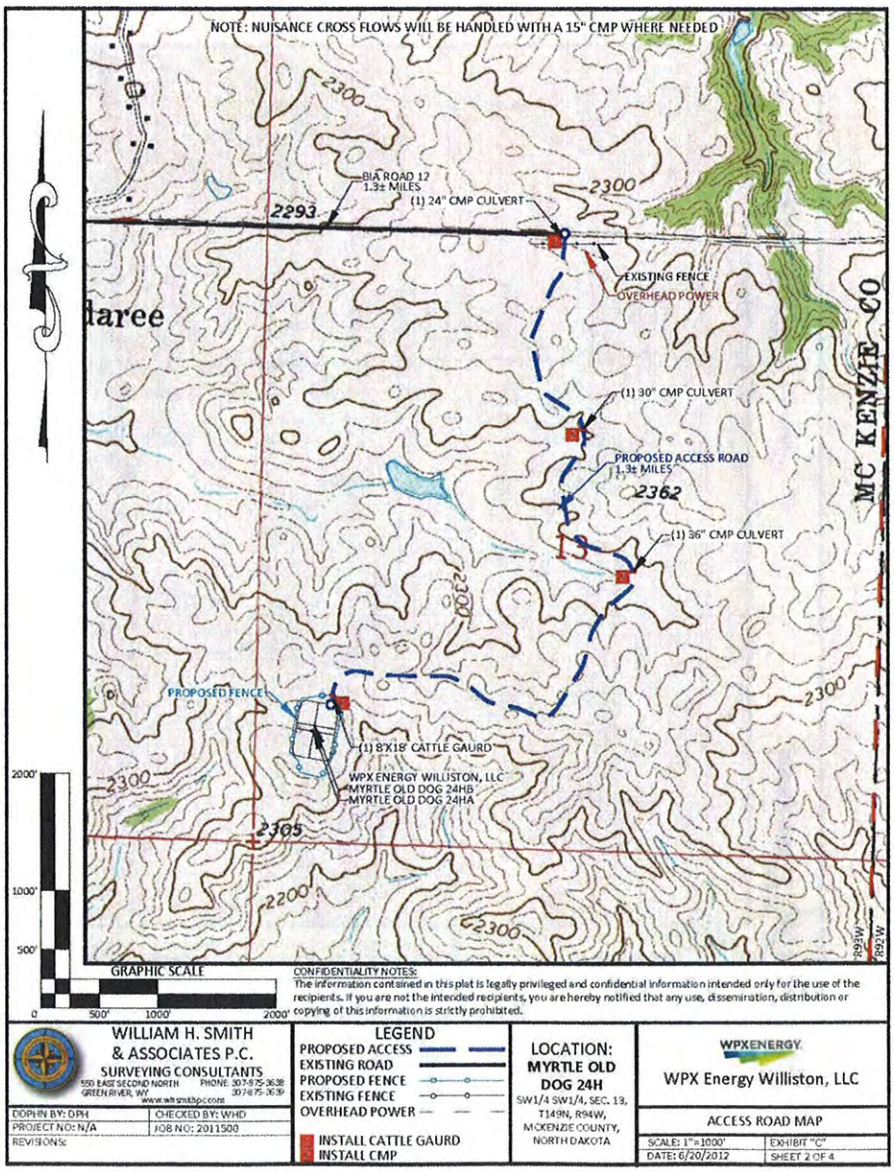
APPLICANT'S CERTIFICATE

I, _____, do hereby certify that I am the agent for WPX Energy Williston, LLC, herinafter designated the applicant; That William H. Dollnar who subscribed to the foregoing Affidavit, is employed by the applicant as a land surveyor and that he was directed by the applicant to survey the location of this pad, road, pipeline, utility, fiber optic, & above ground appurtenances Right-Of-Ways, 1.351 miles in length beginning at Sta. 0+00.00 and ending at Sta. 71+34.08 and 1.248 miles in length beginning at Sta. 0+00.00 and ending at Sta. 65+87.98, that said pad, road, pipeline, utility, fiber optic, & above ground appurtenances Right-Of-Ways are accurately represented on this map; That such survey as represented on this map has been adopted by the applicant as the definite location of the Right-Of-Ways thereby shown; and that the map has been prepared to be filed with the Secretary of the Interior or his duly authorized representative as part of the application for said Right-Of-Ways to be granted the applicant, its successors and assigns, with the right to construct, maintain, and repair improvements, thereon and thereover, for such purposes, and with the further right in the applicant, its successors and assigns to transfer this Right-Of-Ways by assigned, grant, or otherwise.

_____
APPLICANT

_____
TITLE


BIA ROAD 12
1.3± MILES
PROPOSED ACCESS ROAD
1.3 ± MILES
MANDAREE
WPX ENERGY WILLISTON, LLC
MYRTLE OLD DOG 24H
GRAPHIC SCALE
0
1 MILE
2 MILE
4 MILE
CONFIDENTIALITY NOTES:
The information contained in this plat is legally privileged and confidential information intended only for the use of the recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
550 EAST SECOND NORTH GREEN RIVER, WY
PHONE: 307-875-3638
307-875-3639
www.whsmithpc.com
DDPHN BY: DPH
CHECKED BY: WHD
PROJECT NO: N/A
JOB NO: 2011S00
REVISIONS:
LEGEND
PROPOSED ACCESS
EXISTING ROAD
LOCATION:
MYRTLE OLD DOG 24H
SW1/4 SW1/4, SEC. 13, T149N, R94W, MCKENZIE COUNTY, NORTH DAKOTA
WPXENERGY
WPX Energy Williston, LLC
AREA MAP
SCALE: 1"= 2 MILE
EXHIBIT "C"
DATE: 6/20/2012
SHEET 1 OF 4


NOTE: NUISANCE CROSS FLOWS WILL BE HANDLED WITH A 15" CMP WHERE NEEDED
BIA ROAD 12
1.3± MILES
(1) 24" CMP CULVERT
EXISTING FENCE
OVERHEAD POWER
(1) 30" CMP CULVERT
PROPOSED ACCESS ROAD
1.3± MILES
(1) 36" CMP CULVERT
PROPOSED FENCE
(1) 8'X18' CATTLE GAURD
WPX ENERGY WILLISTON, LLC
MYRTLE OLD DOG 24HB
MYRTLE OLD DOG 24HA
2293
2300
2362
2305
2200
MC KENZIE CO
R95W
R96W
GRAPHIC SCALE
2000'
1000'
500'
0
500'
1000'
2000'
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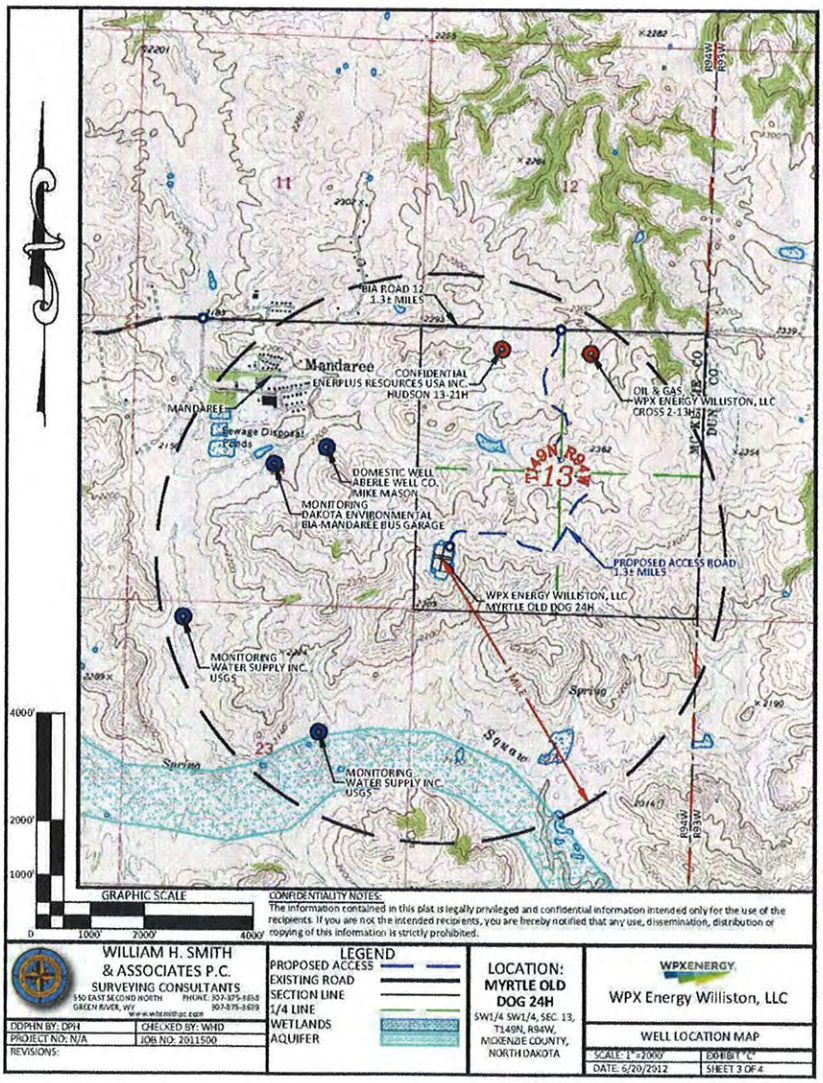
WILLIAM H. SMITH & ASSOCIATES P.C.
SURVEYING CONSULTANTS
550 EAST SECOND NORTH PHONE: 307-875-3638
GREEN RIVER, WY 307-875-3639
www.whsmithpc.com
DRAWN BY: DPH
CHECKED BY: WHD
PROJECT NO: N/A
JOB NO: 2011500
REVISIONS:
LEGEND
PROPOSED ACCESS
EXISTING ROAD
PROPOSED FENCE
EXISTING FENCE
OVERHEAD POWER
INSTALL CATTLE GAURD
INSTALL CMP
LOCATION:
MYRTLE OLD DOG 24H
SW1/4 SW1/4, SEC. 13, T149N, R94W, MCKENZIE COUNTY, NORTH DAKOTA
WPXENERGY
WPX Energy Williston, LLC
ACCESS ROAD MAP
SCALE: 1"=1000'
EXHIBIT "C"
DATE: 6/20/2012
SHEET 2 OF 4


Mandaree
BIA ROAD 12
1.3± MILES
CONFIDENTIAL
ENERPLUS RESOURCES USA INC.
HUDSON 13-21H
OIL & GAS
WPX ENERGY WILLISTON, LLC
CROSS 2-13H
MANDAREE
Sewage Disposal
Ponds
DOMESTIC WELL
ABERLE WELL CO.
MIKE MASON
MONITORING
DAKOTA ENVIRONMENTAL
BIA-MANDAREE BUS GARAGE
T149N, R94W
13
PROPOSED ACCESS ROAD
1.3± MILES
WPX ENERGY WILLISTON, LLC
MYRTLE OLD DOG 24H
MONITORING
WATER SUPPLY INC.
USGS
MONITORING
WATER SUPPLY INC.
USGS
Spring
Spring
Squaw
1 MILE
11
12
23
R94W
R93W
4000'
2000'
1000'
GRAPHIC SCALE
0
1000'
2000'
4000'
CONFIDENTIALITY NOTES:
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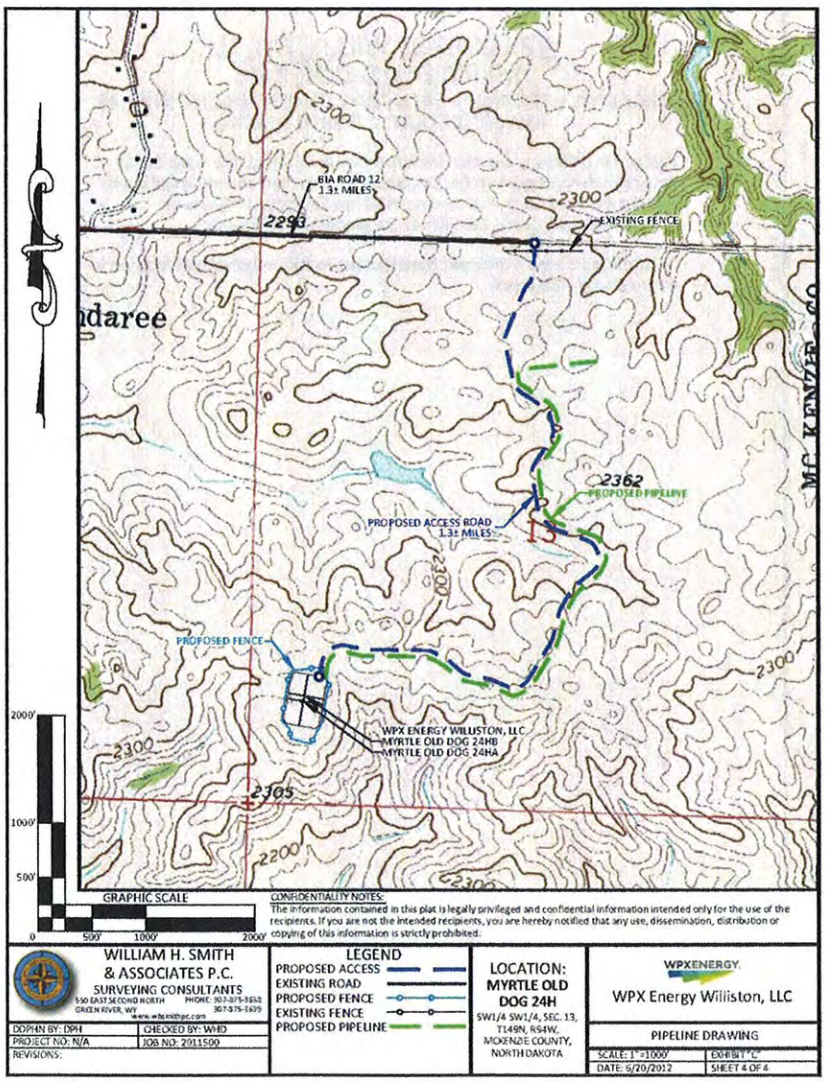
SURVEYING CONSULTANTS
550 EAST SECOND NORTH
GREEN RIVER, WY
PHONE: 307-875-8868
307-875-8878
DOPHN BY: DPH
CHECKED BY: WHD
PROJECT NO: N/A
JOB NO: 2011500
REVISIONS:
LEGEND
PROPOSED ACCESS
EXISTING ROAD
SECTION LINE
1/4 LINE
WETLANDS
AQUIFER
LOCATION:
MYRTLE OLD
DOG 24H
SW1/4 SW1/4, SEC. 13,
T149N, R94W,
MCKENZIE COUNTY,
NORTH DAKOTA
WPXENERGY
WPX Energy Williston, LLC
WELL LOCATION MAP
SCALE: 1" = 2000'
EXHIBIT "C"
DATE: 6/20/2012
SHEET 3 OF 4


BIA ROAD 12
1.3± MILES
2293
EXISTING FENCE
2300
2362
PROPOSED PIPELINE
PROPOSED ACCESS ROAD
1.3± MILES
13
PROPOSED FENCE
WPX ENERGY WILLISTON, LLC
MYRTLE OLD DOG 24HB
MYRTLE OLD DOG 24HA
2305
2200
2000'
1000'
500'
GRAPHIC SCALE
0
500'
1000'
2000'
CONFIDENTIALITY NOTES:
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WILLIAM H. SMITH & ASSOCIATES P.C.
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GREEN RIVER, WY
PHONE: 307-875-3515
307-875-5699
DOPHN BY: DPH
CHECKED BY: WHS
PROJECT NO: N/A
JOB NO: 2011500
REVISIONS:
LEGEND
PROPOSED ACCESS
EXISTING ROAD
PROPOSED FENCE
EXISTING FENCE
PROPOSED PIPELINE
LOCATION:
MYRTLE OLD DOG 24H
SW1/4 SW1/4, SEC. 13, T149N, R94W, MCKENZIE COUNTY, NORTH DAKOTA
WPXENERGY
WPX Energy Williston, LLC
PIPELINE DRAWING
SCALE: 1" =1000'
EXHIBIT "C"
DATE: 6/20/2012
SHEET 4 OF 4

WPX ENERGY WILLISTON, LLC

MYRTLE OLD DOG 24H

SECTION 13, TOWNSHIP 149 NORTH, RANGE 94 WEST, 5TH P.M.
MCKENZIE COUNTY, NORTH DAKOTA

Proceed in a Easterly direction from Mandaree, North Dakota along BIA 12 approximately 1.3 miles to the junction of this road and the proposed access road to the South; turn right and proceed in a Southerly to Westerly direction approximately 1.3 miles to the proposed well location.

Total distance from Mandaree, North Dakota to the proposed well location is approximately 2.6 miles.

APPENDIX B

Species Accounts and Effects Determinations

SPECIES ACCOUNTS AND EFFECTS DETERMINATIONS

ENDANGERED SPECIES ACT

Black-footed Ferret (*Mustela nigripes*)
Affects Determination: No Effect

Black-footed ferrets are nocturnal, solitary carnivores of the weasel family that have been largely extirpated from the wild primarily due to range-wide decimation of the prairie dog (*Cynomys* sp.) ecosystem (Kotliar et al. 1999). They have been listed by the U.S. Fish and Wildlife Service (USFWS) as endangered since 1967, and have been the object of extensive re-introduction programs (USFWS 2010a). Ferrets inhabit extensive prairie dog complexes of the Great Plains, typically composed of several smaller colonies in proximity to one another that provide a sustainable prey base. The *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (USFWS 1989) states that ferrets require black-tailed prairie dog (*Cynomys ludovicianus*) towns or complexes greater than 80 acres in size, and towns of this dimension may be important for ferret recovery efforts (USFWS 1988a). Prairie dog towns of this size are not found in the project area. In addition, this species has not been observed in the wild for more than 20 years. The Proposed Action would have **no effect** on the black-footed ferret.

Gray Wolf (*Canis lupus*)
Affects Determination: No Effect

The gray wolf, listed as endangered in the United States in 1978 (USFWS 1978), was believed extirpated from North Dakota in the 1920s and 1930s with only sporadic reports from the 1930s to present (Licht and Huffman 1996). The presence of wolves in most of North Dakota consists of occasional dispersing animals from Minnesota and Manitoba (Licht and Fritts 1994; Licht and Huffman 1996). Most documented gray wolf sightings that have occurred within North Dakota are believed to be young males seeking to establish territory (Hagen et al. 2005). The Turtle Mountains region in north-central North Dakota provides marginal habitat that may be able to support a very small population of wolves. The closest known pack of wolves is the Minnesota population located approximately 17.4 miles from the northeast corner of North Dakota.

The gray wolf uses a variety of habitats that support a large prey base, including montane and low-elevation forests, grasslands, and desert scrub (USFWS 2010b). Due to a lack of forested habitat and distance from Minnesota and Manitoba populations, as well as the troubled relationship between humans and wolves and their vulnerability to being shot in open habitats (Licht and Huffman 1996), the re-establishment of gray wolf populations in North Dakota is unlikely. Additionally, habitat fragmentation, in particular road construction as a result of oil and gas development, may further act as a barrier against wolf recolonization in western North Dakota. Therefore, the Proposed Action would have **no effect** on the gray wolf.

Whooping Crane (*Grus americana*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The whooping crane was listed as endangered in 1970 in the United States by the USFWS, and in 1978 in Canada. Historically, population declines were caused by shooting and destruction of nesting habitat in the prairies from agricultural development. Current threats to the species includes habitat destruction, especially suitable wetland habitats that support breeding and nesting, as well as feeding and roosting during their fall and spring migration (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007).

The July 2010 total wild population was estimated at 383 (USFWS 2010c). There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, where approximately 83% of the wild nesting sites occur (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007; USFWS 2010c). McKenzie County, including the project area, is within the primary migratory flyway of whooping cranes.

Whooping cranes probe the soil subsurface with their bills for foods on the soil or vegetation substrate (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Whooping cranes are omnivores and foods typically include agricultural grains, as well as insects, frogs, rodents, small birds, minnows, berries, and plant tubers. The largest amount of time during migration is spent feeding in harvested grain fields (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Studies indicate that whooping cranes use a variety of habitats during migration, in addition to cultivated croplands, and generally roost in small palustrine (marshy) wetlands within 1 kilometer of suitable feeding areas (Howe 1987, 1989). Whooping cranes have been recorded in riverine habitats during their migration, with eight sightings along the Missouri River in North Dakota (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007:18). In these cases, they roost on submerged sandbars in wide, unobstructed channels that are isolated from human disturbance (Armbruster 1990).

The proposed project area falls within the primary migratory flyway of the whooping crane, therefore the possibility of transient cranes flying over the project area exists. In addition, suitable whooping crane foraging habitat was observed near the project area. The proposed Myrtle Old Dog #24H project area is dominantly uncultivated grassland prairie at least 23.7 miles from a riverine habitat, and it is highly unlikely that a whooping crane would roost or forage within the project location. WPX would cease all construction activities and notify the Bureau of Indian Affairs and USFWS of a sighting, should a whooping crane be spotted within 1 mile of the project area. As a result, the Proposed Action **may affect, but is not likely to adversely affect** the endangered whooping crane.

Piping Plover (*Charadrius melodus*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The piping plover is a small shorebird which breeds only in three geographic regions of North America: the Atlantic Coast, the Northern Great Plains, and the Great Lakes. Piping plover populations were federally listed as threatened and endangered in 1985, with the Northern Great Plains and Atlantic Coast populations listed as threatened, and the Great Lakes population listed as endangered (USFWS 1985a).

Plovers in the Great Plains make their nests on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands, and on beaches, sand bars, and dredged material islands of major river systems (USFWS 2002, 2010d). The shorelines of lakes of the Missouri River constitute significant nesting areas for the bird. Piping plovers nest on the ground, making shallow scrapes in the sand, which they line with small pebbles or rocks (USFWS 1988b). Anthropogenic alterations of the landscape along rivers and lakes where piping plover nest have increased the number and type of predators, subsequently decreasing nest success and chick survival (USFWS 2002, 2010d). The birds fly south by mid to late August to areas along the Texas coast and Mexico (USFWS 2002). The Northern Great Plains population has continued to decline despite federal listing, with population estimates of 1,500 breeding pairs in 1985 reduced to fewer than 1,100 in 1990. Low survival of adult birds has been identified as a factor (Root et al. 1992). Current conservation strategies include identification and preservation of known nesting sites, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 1988b, 2010d).

Suitable shoreline habitat for breeding and nesting plovers does not occur in the project area and Lake Sakakawea is a minimum of approximately 23.7 river miles and 4.2 straight line miles away from the proposed well pad. Because of the close proximity of the project location to the shoreline of Lake Sakakawea, transient individuals may visit the project area during their migration; however, the following measures are in place to prevent any interruption of their nesting and migration: WPX would use a closed-loop drilling system and surround the proposed well pad with a 24-inch synthetically enhanced containment berm. In addition, a metal berm, designed to hold 110% of the largest tank plus one full day's production volume, would surround the tank battery to prevent hazardous runoff or spills. Finally, all electric and fiber optic utility lines would be installed underground. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** piping plovers.

Designated Critical Habitat of Piping Plover
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The USFWS has designated critical habitat for the Great Lakes and Northern Great Plains populations of piping plover (USFWS 2002). Designated Critical Habitat for the piping plover includes 183,422 acres and 1,207.5 river miles of habitat, including areas near the proposed project location, along the shoreline of Lake Sakakawea in Dunn and McKenzie Counties, North Dakota (USFWS 2002).

Potential construction runoff or spills could create a disturbance in piping plover foraging and nesting habitat along the shoreline of Lake Sakakawea. To minimize potential disturbance on plover Designated Critical Habitat, WPX would use a closed-loop drilling system and surround the proposed well pad with a 24-inch synthetically enhanced containment berm. In addition, a metal berm, designed to hold 110% of the largest tank plus one full day's production volume, would surround the tank battery to prevent hazardous runoff or spills. Straw rolls and matting would be placed on all high slope areas and fill would be positioned to serve as secondary containment to block the tops of drainages to prevent unwanted hydrologic movement off site. It is unlikely that the Proposed Action would modify, alter, disturb, or affect the shoreline of Lake Sakakawea. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** Designated Critical Habitat of the piping plover.

Interior Least Tern (*Sterna antillarum*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The population of the interior least tern is listed as endangered by the USFWS (1985b). This bird is the smallest member of the gull and tern family, measuring approximately 9 inches in length. Terns remain near flowing water, where they feed by hovering over and diving into standing or flowing water to catch small fish (USFWS 2010e).

The population of interior least terns breeds in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems, where they nest in small colonies. From late April to August, terns nest in a shallow hole scraped in an open sandy area, gravel patch, or exposed flat and bare sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. The adults continue to care for chicks after they hatch. Least terns in North Dakota will often be found sharing sandbars with the piping plover, a threatened species (USFWS 2010e).

Census data indicate over 8,000 interior least terns in the population. In North Dakota, the least tern is found mainly on the Missouri River from Garrison Dam south to Lake Oahe, and on the Missouri and Yellowstone rivers upstream of Lake Sakakawea (USFWS 1990a, 2010e). Approximately 100 pairs breed in North Dakota (USFWS 2010e). Details of their migration are not known, but their winter range is reported to include the Gulf of Mexico and Caribbean Islands (USFWS 1990a, 2010e).

Loss of suitable breeding and nesting habitat for terns has resulted from dam construction and river channelization on major rivers throughout the Mississippi, Missouri, and Rio Grande river systems. River and reservoir changes have led to reduced sandbar formation and other shoreline habitats for breeding, resulting in population declines. In addition, other human shoreline disturbances affect the species (USFWS 1990a). Critical habitat has not been designated for the species (USFWS 2010e).

Current conservation strategies include identification and avoidance of known nesting areas, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 2010e).

While terns could potentially traverse the project area as they make their way back towards the lake, it is unlikely that terns would visit the upland habitats present in the project area. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** endangered least terns.

Pallid Sturgeon (*Scaphirhynchus albus*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The pallid sturgeon was listed as Endangered in 1990 in the United States by the USFWS (1990b). The primary factor leading to the decline of this species is the alteration of habitat through river channelization, creation of impoundments, and alteration of flow regimes (USFWS 1990b). These alterations within the Missouri River have blocked movements to spawning, feeding, and rearing areas, destroyed spawning habitat, altered flow conditions which can delay spawning cues, and reduced food sources by lowering productivity (USFWS 2007a). The fundamental elements of pallid sturgeon habitat are defined as the bottom of

swift waters of large, turbid, free-flowing rivers with braided channels, dynamic flow patterns, flooding of terrestrial habitats, and extensive microhabitat diversity (USFWS 1990b).

The pallid sturgeon population which is found near the project areas occurs from the Missouri River below Fort Peck Dam to the headwaters of Lake Sakakawea and the lower Yellowstone River up the confluence of the Tongue River, Montana (USFWS 2007a). This population consists of approximately 136 wild adult pallid sturgeon (USFWS 2007a). Hatchery reared sturgeon have also been stocked since 1998. The pallid sturgeon has been found to utilize the 25 kilometers of riverine habitat that would be inundated by Lake Sakakawea at full pool (Bramblett 1996 per USFWS 2007a). Larval pallid sturgeons have also been found to drift into Lake Sakakawea. While the majority of pallid sturgeons are found in the headwaters of Lake Sakakawea, North Dakota Game and Fish have caught and released pallid sturgeon in nets set in 80 to 90 feet of water between the New Town and Van Hook area. Based on this information, pallid sturgeon could be found throughout Lake Sakakawea (personal communication, email from Steve Krentz, Pallid Sturgeon Project Lead, U.S. Fish and Wildlife Service, to Mike Cook, Aquatic Ecologist, SWCA Environmental Consultants, September 3, 2010).

Suitable habitat for pallid sturgeon does not occur in the project area, and Lake Sakakawea is a minimum of 4.2 straight line miles away from the proposed project area. Potential pollution and sedimentation occurring within the project area are concerns for downstream populations of endangered pallid sturgeon. Activities associated with the construction, production, or reclamation of the proposed project area are not anticipated to adversely affect water quality and subsequently the pallid sturgeon. In addition, straw rolls and matting would be placed on all high slope areas, in addition to a 2-foot synthetically enhanced berm surrounding the well pad and secondary containment in the form of fill placed into drainages to minimize any potential impact on pallid sturgeon habitat. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** pallid sturgeon.

Dakota Skipper (*Hesperia dacotae*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The Dakota skipper is a small butterfly with a 1-inch wingspan and is found primarily in undisturbed native tall grass and upland dry Northern mixed grass prairie areas with a high diversity of wildflowers and grasses (Committee on the Status of Endangered Wildlife in Canada 2003). The Dakota skipper appears to require a range of precipitation-evaporation ratios between 60 and 105 and a soil pH between 7.2 and 7.9 (McCabe 1981). Larvae feed on grasses, favoring little bluestem (*Schizachyrium scoparium*). Adults commonly feed on nectar of flowering native forbs such as harebell (*Campanula rotundifolia*), wood lily (*Lilium philadelphicum*), and purple coneflower (*Echinacea angustifolia*). The species is threatened by conversion of native prairie to cultivated agriculture or shrublands, over-grazing, invasive species, gravel mining, and inbreeding (USFWS 2005). Suitable habitat does exist within the proposed project area and the potential to fragment Dakota skipper habitat exists with the creation of new access roads through previously uncultivated prairie. However, it is not anticipated that construction activities would negatively impact the species as long as internal reclamation is conducted as soon as the lifespan of the well pad is complete; in addition to the

implementation of a noxious weed management program. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** this species. The use of best management practices and conservation guidelines (USFWS 2007b) during construction and operation and immediate reclamation of short-term disturbance should decrease direct, indirect, and cumulative impacts to this species.

Sprague's Pipit (*Anthus spragueii*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The Sprague's pipit is a small passerine bird that is native to the North American grasslands. It is a ground nester that breeds and winters on open grasslands and feeds mostly on insects and spiders and some seeds. The Sprague's pipit is closely tied with native prairie habitat and breeds in the north-central United States in Minnesota, Montana, North Dakota, and South Dakota as well as south-central Canada (USFWS 2010f). Wintering occurs in the southern states of Arizona, Texas, Oklahoma, Arkansas, Mississippi, Louisiana, and New Mexico. Sprague's pipit are not known to occur within the project areas; however, suitable habitat does occur. The dominant vegetation found at the proposed Myrtle Old Dog #24H well pad location was uncultivated, native prairie grasslands, which is possible nesting and foraging habitat for the Sprague's pipit. In addition, the creation of an access road and well pad through previously uncultivated prairie would serve to fragment possible habitat. However, by placing multiple wells on a single pad, utilizing previous roads to minimize creation of new access roads, as well as the immediate reclamation of the well pad after its lifespan is complete, the potential to adversely affect the Sprague's pipit is greatly minimized. The Proposed Action **may affect, but is not likely to adversely affect** this species. The use of best management practices and conservation guidelines (USFWS 2007b) during construction and operation and immediate reclamation of short-term disturbance should decrease direct, indirect, and cumulative impacts to this species.

MIGRATORY BIRD TREATY ACT / THE BALD AND GOLDEN EAGLE PROTECTION ACT

Bald Eagle (*Haliaeetus leucocephalus*)
Status: Delisted in 2007; protected under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act
Effects of Project: No adverse effects anticipated

Suitable nesting or foraging habitat for bald eagles includes old growth trees relatively close (usually less than 1.24 miles [Hagen et al. 2005]) to perennial water bodies. The project area does not contain old growth trees and is located at a minimum of approximately 4.2 straight line miles from Lake Sakakawea. No suitable nesting habitat was observed within 0.5 mile line-of-sight during the field surveys. Therefore, no adverse effects are anticipated. However, the possibility of transient, flying bald eagle individuals traversing the project area does exist.

Golden Eagle (*Aquila chrysaetos*)
Status: Not Listed; protected under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act
Effects of Project: No adverse effects anticipated

No suitable nesting habitat was observed during the field surveys; however, transient golden eagles may occur within or near the project area. The closest known golden eagle nest occurs approximately 2.94 miles southwest of the proposed Myrtle Old Dog #24H well pad location. 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 suitable nesting habitat. However, no primary or secondary indication of golden eagle presence, including nests, was observed within or near the project area during the field survey. Therefore, the Proposed Action is unlikely to cause any adverse effects to golden eagles.

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APPENDIX C
Consultation Reply from MHA THPO

United States Department of the Interior

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

IN REPLY REFER TO:
DESCRM
MC-208

SEP 07 2012

Elgin Crows Breast, THPO
Mandan, Hidatsa and Arikara Nation
404 Frontage Road
New Town, North Dakota 58763

Dear Mr. Crows Breast:

We have considered the potential effects on cultural resources of two oil well pads and two gathering pipelines in Dunn and McKenzie Counties, North Dakota. Approximately 158.48 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the area depicted in the enclosed reports. One archaeological site (32MZ2306) was revisited and two others (32MZ2413, 32MZ2414) were located that may possess the quality of integrity and meet at least one of the criteria (36 C.F.R. § 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 U.S.C. § 1996 [1994]).

As the surface management agency, and as provided for in 36 C.F.R. § 800.5 (2005), we have reached a determination of **no historic properties affected** for this undertaking, as the archaeological sites will be avoided. Catalogued as **BIA Case Number AAO-3050/FB/12**, the proposed undertakings, locations, and project dimensions are described in the following reports:

Herson, Chandler S.
(2012) A Class I and Class III Cultural Resource Inventory of the Wilson Buffalo #9H Well Pad and Utility Corridor, Fort Berthold Indian Reservation, Dunn County, North Dakota. SWCA Environmental Consultants for WPX Energy Williston, LLC, Tulsa, OK.

Leroy, Adam, Chandler S. Herson and Scott Yost
(2012) A Class I and Class III Cultural Resource Inventory of the Myrtle Old Dog #24H Well Pad and Utility Corridor, Fort Berthold Indian Reservation, McKenzie County, North Dakota. SWCA Environmental Consultants for WPX Energy Williston, LLC, Tulsa, OK.

Reinhart, Damien S.
(2012a) A-Class I and Class III Cultural Resource Inventory of the Mabel Levings #14-23H Gathering Pipeline, Fort Berthold Indian Reservation Dunn County, North Dakota. SWCA Environmental Consultants for WPX Energy Williston, LLC, Tulsa, OK.

(2012b) A Class I and Class III Cultural Resource Inventory of the Rita Blackhawk #34H Gathering Pipeline, Fort Berthold Indian Reservation Dunn County, North Dakota. SWCA Environmental Consultants for WPX Energy Williston, LLC, Tulsa, OK.

If your office concurs with this determination, consultation will be completed under the National Historic Preservation Act and its implementing regulations. We will adhere to the Standard Conditions of Compliance.

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

APPENDIX D

U.S. Fish and Wildlife Service Informal Section 7 Consultation and Concurrence Letters

SWCA
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.

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June 28, 2012

Jeffrey K. Towner
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, ND 58501

RE: Request for Concurrence Letter

Dear Mr. Towner,

The Bureau of Indian Affairs (BIA) is preparing an environmental assessment (EA) under the National Environmental Policy Act (NEPA), in cooperation with the Bureau of Land Management (BLM), the latter of which regulates the approval process associated with the drilling and subsequent extraction of minerals held in trust by the BIA. The Proposed Action includes approval by the BIA for the construction, drilling, completion, and production of three developmental oil and gas well pads and their associated wells, access roads, gathering pipelines, and electric and fiber optic utility lines.

WPX Energy Williston, LLC (WPX) proposes to develop three locations, referred to as the Myrtle Old Dog #24H, Patricia Kelly #2-1H, and Howling Wolf #28-33H well pad locations, on the Fort Berthold Indian Reservation (Reservation). The proposed surface locations, illustrated in Figures 1 through 4, are:

- **Myrtle Old Dog #24H:** SW¼ SW¼ of Section 13, Township (T) 149 North (N), Range (R) 94 West (W), approximately 1.52 miles south of Mandaree in McKenzie County, North Dakota.
- **Patricia Kelly #2-1H:** SW¼ NE¼ of Section 3, T150N, R94W, approximately 7.22 miles north of Mandaree in McKenzie County, North Dakota.
- **Howling Wolf #28-33H:** SE¼ SE¼ of Section 21, T147N, R92W, approximately 19.07 miles southeast of Mandaree in Dunn County, North Dakota.

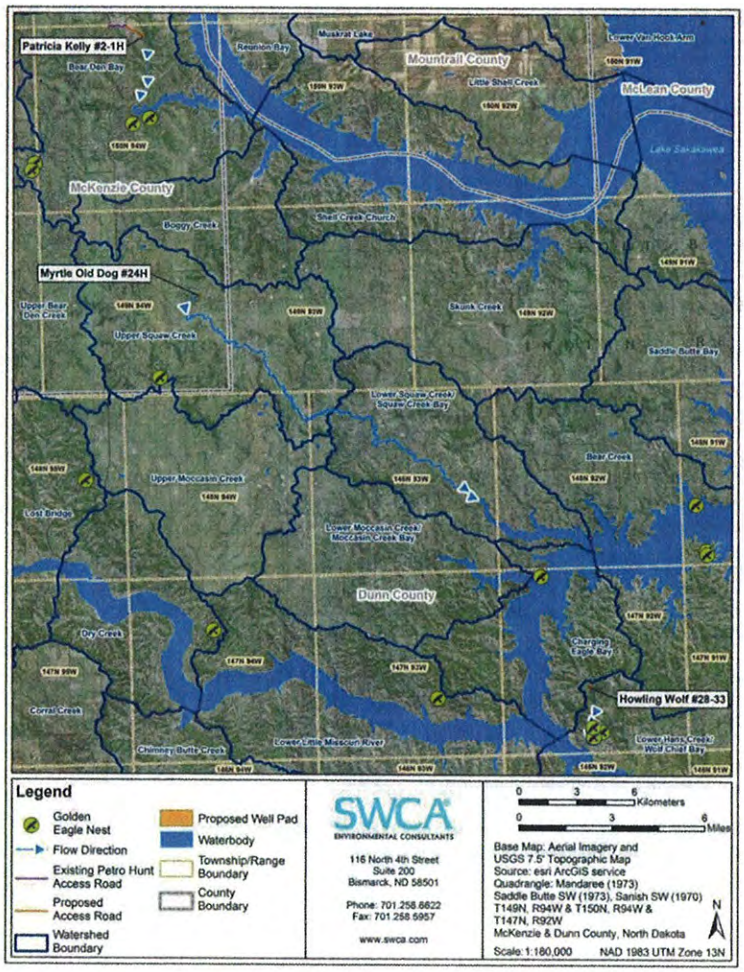

Figure 1. Proposed project areas overview map.

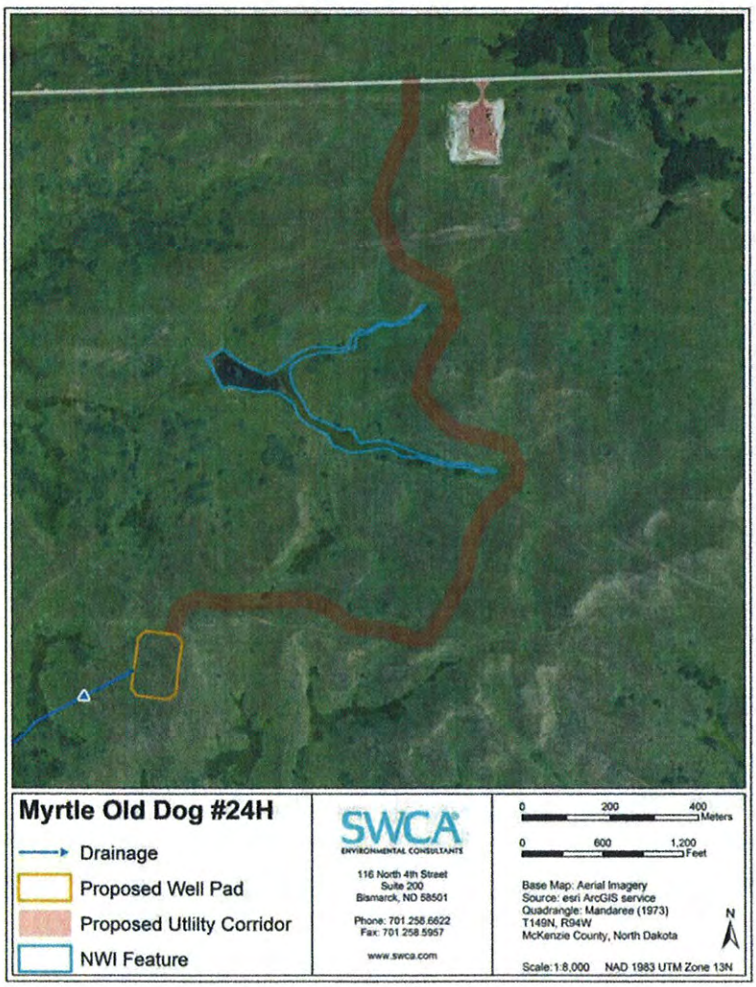

Figure 2. Proposed Myrtle Old Dog #24H well pad and utility corridor location.

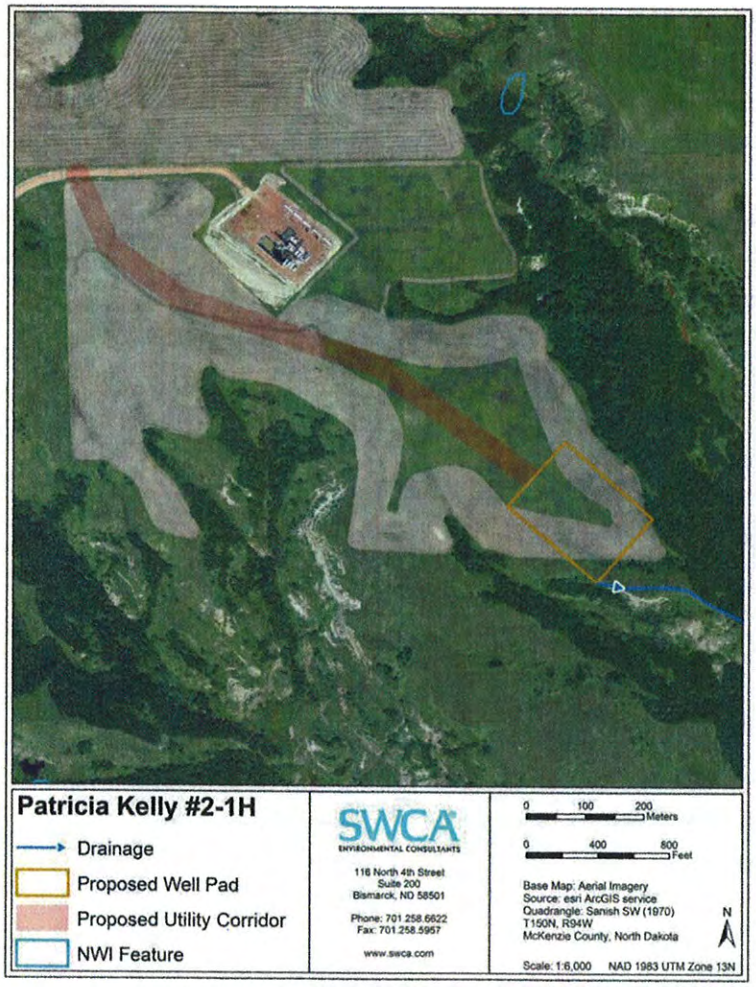

Figure 3. Proposed Patricia Kelly #2-1H well pad and utility corridor location.

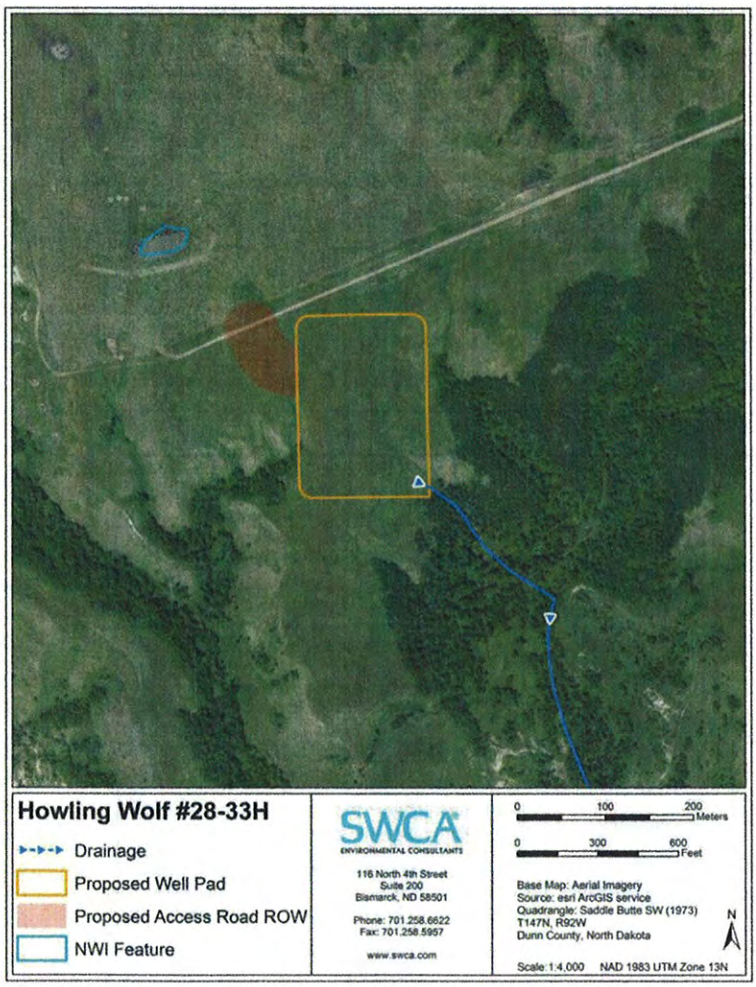

Figure 4. Proposed Howling Wolf #28-33H well pad and utility corridor location.

The associated facilities would include access roads, gathering pipelines, electric and fiber optic utility lines, production facilities (production tanks), and equipment storage facilities. In general, all utilities, gathering pipelines, and access roads would be built at the same time as the well pads. Oil would be stored on location in tank batteries, and then transferred via pipeline to a processing plant or sales point. Natural gas and produced water pipelines would be constructed along access roads; natural gas would be transferred to a future-found market and produced water would be transferred to an approved disposal well.

Construction of the proposed utility corridors would utilize a 130-foot-wide purchased right-of-way (ROW) that would contain the access road, gathering pipelines, and electric and fiber optic transmission lines. WPX would use existing roads and previous disturbances to the greatest extent practicable. Existing highways and arterial roads would provide the main access to the project areas. Approval of the Proposed Action would result in the construction of approximately 1.99 miles of new or improved roads to access the proposed well pads, resulting in approximately 31.05 acres of disturbance, plus approximately 16.74 acres of disturbance for the construction of the proposed well pads, as shown in Table 1.

Table 1. Proposed Well Locations and Biological Observations for the Project Areas.

Proposed Well Pad Name	Area of Disturbance and Location	Biological Observations
Myrtle Old Dog #24H	4.05-acre well pad 1.40-mile, 21.99-acre access road SW¼ of the SW¼ Section 13, Township (T) 149 North (N), Range (R) 94 West (W), McKenzie County, North Dakota	Habitat: Northern wheatgrass – green needlegrass plains. Vegetation observed: prairie sagewort (*Artemisia frigida*), western snowberry (*Symphoricarpos occidentalis*), little bluestem (*Schizachyrium scoparium*), and needle and thread (*Hesperostipa comata*). Wildlife observations: No raptors or nests, or threatened and endangered species observed. However, suitable habitat for Dakota skipper (*Hesperia dacotae*), gray wolf (*Canis lupus*), Sprague's pipit (*Anthus spragueti*), and whooping crane (*Grus americana*) was observed. The nearest known golden eagle (*Aquila chrysaetos*) nest is approximately 2.94 miles southwest of the proposed well pad location (see Figure 1).
Patricia Kelly #2-1H	5.20-acre well pad 0.54-mile, 8.47-acre access road SW¼ of the NE¼ Section 3, T150N, R94W, McKenzie County, North Dakota	Habitat: Agricultural fields. Vegetation observed: soybeans (*Glycine max*). Wildlife observations: No raptors or nests, or threatened and endangered species observed, and no suitable habitat for Dakota skipper, gray wolf, and Sprague's pipit was observed. However, suitable habitat for whooping crane was observed. The nearest known golden eagle nest is approximately 2.68 miles southeast of the proposed well pad location (see Figure 1).

Proposed Well Pad Name	Area of Disturbance and Location	Biological Observations
Howling Wolf #28-33H	7.49-acre well pad 0.05-mile, 0.59-acre access road SE¼ of the SE¼ Section 21, T147N, R92W, Dunn County, North Dakota	Habitat: Northern wheatgrass – green needlegrass plains. Vegetation observed: prairie sagewort, western snowberry, little bluestem, and needle and thread. Wildlife observations: No raptors or nests, or threatened and endangered species observed. However, suitable habitat for Dakota skipper, gray wolf, Sprague's pipit, and whooping crane was observed. The nearest known golden eagle nest is approximately 1.33 miles south of the proposed well pad location (see Figure 1).

Wildlife and Habitat Observations

SWCA Environmental Consultants (SWCA) biologists conducted natural resource surveys for noxious weeds, wetlands/waterbodies, threatened and endangered species habitat, migratory birds and active nests, and bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) nesting habitat on June 18, 19, and 25, 2012. During the field surveys, two dominant habitat types were identified including agricultural field and northern wheatgrass – green needlegrass plains. Northern wheatgrass – green needlegrass plains include wetlands, native grassland, and grass-shrub habitats with riparian and floodplain forests along major drainages.

No raptors, nests, or threatened and endangered species were observed during the surveys. However, habitat that may be suitable for Dakota skipper (*Hesperia dacotae*), gray wolf (*Canis lupus*), Sprague's pipit (*Anthus spragueii*), and whooping crane (*Grus americana*) was observed within the project areas for the proposed Howling Wolf #28-33H and Myrtle Old Dog #24H well pad locations. The nearest known golden eagle nest is approximately 1.33 miles south of the proposed Howling Wolf #28-33H well pad location (see Figure 1).

Project Area Hydrology

The proposed Myrtle Old Dog #24H well pad and utility corridor are located within the Upper Squaw Creek (Hydrologic Unit Code [HUC] 101102050607) sub-watershed, the Waterchief Bay (HUC 1011020506) watershed, and the Lower Little Missouri River (HUC 10110205) drainage basin.

The proposed Patricia Kelly #2-1H well pad and utility corridor are located within the Bear Den Bay (HUC 101101012004) sub-watershed, the Bear Den Creek (HUC 1011010120) watershed, and the Lake Sakakawea (HUC 10110101) drainage basin.

The proposed Howling Wolf #28-33H well pad and utility corridor are located within the Lower Hans Creek/Wolf Chief Bay (HUC 101102050603) sub-watershed, the Waterchief Bay watershed, and the Lower Little Missouri River drainage basin. Figure 1 illustrates the surface water runoff directions from the proposed well pads. The shortest distance from Lake Sakakawea to the project areas is a 1.47 river miles. SWCA identified two palustrine emergent (PEM) wetlands, which were adequately avoided, within the survey boundary of the proposed utility

corridor for the Myrtle Old Dog #24H well pad (see Figure 2). The nearest wetland, identified on the National Wetlands Inventory map, to the project areas is a PEM wetland approximately 200 feet west of the proposed Patricia Kelly #2-1H well pad location. In addition, an intermittent freshwater pond is approximately 523.21 feet northwest of the proposed Howling Wolf #28-33H well pad location.

Best management practices (BMPs) would be implemented for all ground-disturbing activities, as required by the Clean Water Act. These include straw rolls and matting on all high slope areas, in addition to a 24-inch synthetically enhanced berm surrounding the well pads and secondary containment in the form of fill placed at the tops of drainages. With the implementation of all the provisions of the Clean Water Act National Pollutant Discharge Elimination System, including federal requirements for implementation of adequate Spill Prevention, Control and Countermeasures during drilling and construction, no impacts to water resources are anticipated.

Threatened and Endangered Species Occurrence and Habitat

Several wildlife species that may exist, or have been known to exist in Dunn and McKenzie Counties, are listed as threatened or endangered under the Endangered Species Act (16 United States Code 1531 et seq.) (ESA). According to the U.S. Fish and Wildlife Service (USFWS), listed species in Dunn and McKenzie Counties, North Dakota, include the gray wolf, black-footed ferret (*Mustela nigripes*), whooping crane, piping plover (*Charadrius melodus*) and its Designated Critical Habitat, interior least tern (*Sterna antillarum*), pallid sturgeon (*Scaphirhynchus albus*), as well as two federal candidate species, the Dakota skipper and Sprague's pipit. The listed species and their federal status are provided in Table 2. SWCA noted habitat that may be suitable of supporting the Dakota skipper, gray wolf, and Sprague's pipit within or near the project areas for the proposed Howling Wolf #28-33H and Myrtle Old Dog #24H well pad locations. SWCA noted habitat that may be suitable of supporting the whooping crane within or near the project areas for the proposed Patricia Kelly #2-1H well pad location.

Table 2. Summary of Potential Effects to Threatened and Endangered Species.

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Black-footed Ferret (*Mustela nigripes*)	Endangered	Species is presumed extirpated from North Dakota.	None	No Effect
Gray Wolf (*Canis lupus*)	Endangered	Nearest known gray wolf populations exist in Minnesota, Canada, Montana, and Wyoming. Western North Dakota sightings in the late twentieth century are speculated to be solitary, transient, young adult males seeking to establish territory.	None	No Effect

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Whooping Crane (*Grus americana*)	Endangered	Possible suitable foraging and roosting habitat is present within 1.0 mile of the proposed project locations. Additionally, the proposed Patricia Kelly #2-1H location is within actively cultivated cropland and is within 1.22 straight line miles of Lake Sakakawea.	WPX would construct all electric and fiber optic utility lines underground. Drilling or construction activity would cease and the Bureau of Indian Affairs (BIA) and U.S. Fish and Wildlife Service (USFWS) would be notified if whooping cranes are sighted within 1 mile of the project areas. Activities may commence when the bird(s) has left the 1-mile buffer area.	May Affect, Is Not Likely to Adversely Affect
Piping Plover (*Charadrius melodus*)	Threatened	The nearest possible suitable nesting and foraging habitat occurs on the shoreline and islands of Lake Sakakawea, a minimum of approximately 1.47 river miles and 1.22 straight line miles from the proposed well pads and utility corridors. Piping plover may transition through the project areas.	WPX would use a closed-loop drilling system and surround the proposed well pads with a 24-inch synthetically enhanced containment berm. In addition, a metal berm, designed to hold 110% of the largest tank plus one full day's production, would surround the tank batteries to prevent hazardous runoff or spills. Straw rolls and matting would be placed on all high slope areas and fill would be positioned to serve as secondary containment to block the tops of drainages to prevent contaminant movement offsite.	May Affect, Is Not Likely to Adversely Affect

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Designated Critical Habitat for Piping Plover	Designated Critical Habitat	Critical Habitat occurs within the watershed of the project areas, on the shoreline and islands of Lake Sakakawea, a minimum of approximately 1.47 river miles from the proposed well pads and utility corridors.	See Piping Plover protection measures	May Affect, Is Not Likely to Adversely Affect
Interior Least Tern (*Sterna antillarum*)	Endangered	The nearest possible suitable nesting and foraging habitat occurs on the shoreline and islands of Lake Sakakawea, a minimum of approximately 1.47 river miles and 1.22 straight line miles from the proposed well pads and utility corridors. Migrating or foraging interior least terns may transition through the project areas.	See Piping Plover protection measures	May Affect, Is Not Likely to Adversely Affect
Pallid Sturgeon (*Scaphirhynchus albus*)	Threatened	Lake Sakakawea, which contains suitable pallid sturgeon habitat, is a minimum of 1.47 river miles from the proposed well pads and access roads.	See Piping Plover protection measures	May Affect, Is Not Likely to Adversely Affect
Dakota Skipper (*Hesperia dacotae*)	Candidate	Native, uncultivated prairie was the dominant vegetation at all of the proposed locations except the Patricia Kelly #2-1H and the presence of a variety of flowering native forbs indicate suitable foraging habitat is present for the Dakota skipper. The creation of an access road may act to fragment Dakota skipper habitat.	The proposed well pads and access roads would be reclaimed as soon as possible after their lifespan is complete. Impacted areas would be returned to pre-construction contours and seeded with a mixture of native seeds as directed by the BIA and Bureau of Land Management.	May Affect

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Sprague's Pipit (*Anthus spragueii*)	Candidate	Native, uncultivated prairie is present at all locations, except the proposed Patricia Kelly #2-HH well pad location. No adverse impact is anticipated as a result of construction activities because of the placement of multiple wells on individual well pad locations, which is intended to minimize disruption of habitat and disturbance buffers.	The proposed well pads would be reclaimed as soon as possible after their lifespan is complete. Impacted areas would be returned to pre-construction contours.	May Affect, Is Not Likely to Adversely Affect
Other Federally Protected Species				
Bald Eagle (*Haliaeetus leucocephalus*)	Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act (MBTA)	Raptor habitat surveys were conducted. SWCA observed no suitable nesting habitat within a 0.5 mile line of sight survey; however, transient individuals may enter the project areas on occasion to forage or traverse.	A 0.5-mile line of sight survey was conducted during the initial field survey. No suitable nesting habitat was observed.	No Adverse Effects Anticipated
Golden Eagle (*Aquila chrysaetos*)	BGEPA and MBTA	No suitable nesting habitat was observed within 0.5 mile of the proposed well pad locations; however, golden eagles may occasionally visit or forage within or around the proposed project locations.	A 0.5-mile line of sight survey was conducted during the initial field survey. The closest known golden eagle nest is approximately 1.33 miles south of the proposed Howling Wolf #28-33H well pad.	No Adverse Effects Anticipated

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Migratory Birds	MBTA	Suitable habitat for nesting migratory birds occurs in the project areas.	WPX would conduct all construction outside of the migratory bird breeding season (between July 16 and January 31). If construction occurs during the breeding season, WPX would mow and maintain vegetation within the project construction areas (access roads and well pads) prior to February 1 and until construction clearing has occurred, weather permitting. If that is not feasible, WPX would conduct an avian survey of the project areas no greater than five days before construction begins, and if nests are discovered, notify the BIA and USFWS.	No Adverse Effects Anticipated

Potential Effects

Direct effects of the Proposed Action on listed species could result from anthropogenic influences including increases in vehicular traffic during drilling and commercial production, or accidental release of drilling fluids or hazardous materials from the drilling, construction, or operation of the wells as well as indirectly from habitat degradation and sedimentation that could cause lowered fecundity and habitat availability.

SWCA wildlife biologists have evaluated the status, life history, and potential effects of the Proposed Action on each of the species listed in Table 2. The potential effects of the project on these species is described in detail in Attachment 1, and summarized in Table 2.

In addition to the ESA, the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act protect nesting migratory bird species. With implementation of the protective and other specific measures identified in Table 2, and Owner-Committed Measures discussed in this letter, the

Proposed Action is unlikely to result in adverse effect on bald or golden eagles or nesting migratory birds.

Owner-Committed Best Management Practices, Mitigation, and Safety Measures

WPX has committed to implementing the following measures for all drilling, construction, and operations on the Reservation, including the Proposed Action.

Construction and Design Measures

- Locate the proposed well pads, access roads, and utility corridors in areas with existing disturbances to the extent possible.
- Install covers under drip buckets and spigots.
- Use a closed-loop drilling system in all areas without a pit, unless there is an emergency. Any fluids and cuttings would be transported off-site to be disposed of at an approved facility.
- Construct berms and install straw waddles on the downslope sides of the proposed well pads.
- Follow the contour (form and line) of the landscape.
- Co-locate multiple utility lines in the same trench.
- Use natural (topography, vegetation) or artificial (berms) features to help screen facilities such as valves and metering stations.
- Paint facilities a color that would blend with the environment.
- Contour disturbed areas to approximate the original contours of the landscape.
- Implement proper storage of chemicals (including secondary containment).
- Keep sites clean, including containing trash in a portable trash cage. The trash cage would be emptied at a state-approved sanitary landfill.
- Avoid or minimize topographic alterations, activities on steep slopes, and disturbances within stream channels and floodplains to the extent possible.
- Keep a watering truck on site and water the access roads as necessary, especially during periods of high winds and/or low precipitation.
- Avoid construction and vehicle use during wet conditions that could result in excessive rutting.
- Avoid removal of, or damage to, trees and woody shrubs where possible.
- Mow the facility or well site instead of clearing vegetation to accommodate vehicles or equipment.
- Conduct interim reclamation of at least half the disturbed area.
- Conduct reclamation without delay if a well is determined to be unproductive, or upon completion of commercial production.
- Lay matting and/or conduct hydro seeding on the fill side of the pads.

- Grind trees and other woody material removed from the pads and add to the topsoil,
- Minimize topsoil removal and stockpile stripped topsoil and protect it from erosion until reclamation activities commence.
- During reclamation, redistribute and seed the topsoil on the disturbed areas, and protect and maintain reclaimed areas until the sites are fully stabilized.
- Develop a final reclamation plan that allows disturbed areas to be quickly absorbed into the natural landscape.
- Maintain buffer strips or use other sediment control measures to avoid sediment migration to stream channels as a result of construction activities.
- Implement an erosion control plan.
- Implement approved Stormwater Pollution Prevention Plan and BMPs for the construction of the access roadways and proposed well pads to prevent erosion and sedimentation.
- Install appropriately sized culverts or other stable stream crossings for any intermittent stream crossings.
- Design roads and facility sites to minimize visual impacts.
- Use existing roads to the extent possible, upgrading as needed.
- Minimize the size of facility sites and types of roads to reduce surface disturbance.
- Avoid locating ROWs on steep slopes.
- Share any common ROWs whenever possible.
- Plan transportation to reduce vehicle density.
- Post speed limits on roads.
- Conduct snow removal activities in a manner that does not adversely impact reclaimed areas and areas adjacent to reclaimed areas.
- Require construction crews to carry fire extinguishers in their vehicles and/or equipment.
- Require construction crews be trained in the proper use of fire extinguishers.
- Contract with the local fire district to provide fire protection.

Bald and Golden Eagle Protective Measures

- SWCA biologists conducted a 0.5-mile line of sight survey from the proposed project areas for potentially suitable bald and golden eagle nesting habitat. No nesting habitat was observed. No previously recorded nests are known to be present within 0.5 mile of the project areas.
- The nearest known golden eagle nest is approximately 1.33 miles south of the proposed Howling Wolf #28-33H well pad.

Migratory Bird Protective Measures

- WPX would conduct all construction outside of the migratory bird breeding season (i.e., between July 16 through January 31); or, if construction occurs during the bird breeding season, WPX would either:
    - mow, maintain, or completely remove vegetation within the project construction area (access roads and proposed well pad disturbance areas) outside of the breeding season and maintain such conditions during the breeding season to deter migratory birds from nesting in the project areas until construction is underway, weather conditions permitting; or
    - if the project areas are not mowed and maintained as indicated above, conduct an avian survey of the project areas no greater than five days before construction begins, and if active nests are discovered, notify BIA and USFWS.
- WPX would use a closed-loop drilling system for the proposed well pads and would surround the proposed well pads with a 24-inch synthetically enhanced berm in addition to steel containment walls around the tank battery that will contain 110% of the largest tank plus one full day's production volume.

ESA Protective Measures

- **Piping Plover and its Designated Critical Habitat, Interior Least Tern, and Pallid Sturgeon:** Erosion control and sediment control mechanisms would be deployed to reduce the potential for sediment transport into drainages and subsequently Lake Sakakawea. The disturbed area would be reclaimed per the BIA's requirements as soon as practicable after construction is complete.
- **Whooping Crane:** If a whooping crane is sighted within 1 mile of the proposed project areas, work would be stopped and the BIA and USFWS would be notified. In coordination with the USFWS, work may resume after the bird(s) leaves the area.
- WPX would use a closed-loop drilling system and would surround the proposed well pads with a 24-inch synthetically enhanced berm, in addition to steel containment walls around the tank batteries that will contain 110% of the largest tank plus one full day's production volume.

With the implementation of the above standard BMPs, general design measures, and species-specific measures, no riparian areas or wetlands would be directly affected by the proposed access roads or proposed well pads.

No effects to the black-footed ferret and gray wolf are anticipated because of the low likelihood of their occurrence in the proposed project areas and other factors discussed in Attachment 1. With implementation of the protective and other specific measures identified in Table 2 and Owner-Committed Measures discussed in this letter, the Proposed Action **may affect, but is not likely to adversely affect** the Dakota skipper, whooping crane, Sprague's pipit, piping plover and its Designated Critical Habitat, interior least tern, and pallid sturgeon.

We are requesting a concurrence letter be sent before July 28, 2012, so that it may be addressed in the final EA. Please send the concurrence letter to the addresses below.

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Sincerely,

Courtney Lafferty
Environmental Specialist
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Enclosures: Attachment 1

ATTACHMENT 1 – SPECIES ACCOUNTS AND EFFECTS DETERMINATIONS

ENDANGERED SPECIES ACT

Black-footed Ferret (*Mustela nigripes*)
Affects Determination: No Effect

Black-footed ferrets are nocturnal, solitary carnivores of the weasel family that have been largely extirpated from the wild primarily due to range-wide decimation of the prairie dog (*Cynomys* sp.) ecosystem (Kotliar et al. 1999). They have been listed by the U.S. Fish and Wildlife Service (USFWS) as endangered since 1967, and have been the object of extensive re-introduction programs (USFWS 2010a). Ferrets inhabit extensive prairie dog complexes of the Great Plains, typically composed of several smaller colonies in proximity to one another that provide a sustainable prey base. The *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (USFWS 1989) states that ferrets require black-tailed prairie dog (*Cynomys ludovicianus*) towns or complexes greater than 80 acres in size, and towns of this dimension may be important for ferret recovery efforts (USFWS 1988a). Prairie dog towns of this size are not found in the project areas. In addition, this species has not been observed in the wild for more than 20 years. The Proposed Action would have **no effect** on the black-footed ferret.

Gray Wolf (*Canis lupus*)
Affects Determination: No Effect

The gray wolf, listed as endangered in the United States in 1978 (USFWS 1978), was believed extirpated from North Dakota in the 1920s and 1930s with only sporadic reports from the 1930s to present (Licht and Huffman 1996). The presence of wolves in most of North Dakota consists of occasional dispersing animals from Minnesota and Manitoba (Licht and Fritts 1994; Licht and Huffman 1996). Most documented gray wolf sightings that have occurred within North Dakota are believed to be young males seeking to establish territory (Hagen et al. 2005). The Turtle Mountains region in north-central North Dakota provides marginal habitat that may be able to support a very small population of wolves. The closest known pack of wolves is the Minnesota population located approximately 17.4 miles from the northeast corner of North Dakota.

The gray wolf uses a variety of habitats that support a large prey base, including montane and low-elevation forests, grasslands, and desert scrub (USFWS 2010b). Due to a lack of forested habitat and distance from Minnesota and Manitoba populations, as well as the troubled relationship between humans and wolves and their vulnerability to being shot in open habitats (Licht and Huffman 1996), the re-establishment of gray wolf populations in North Dakota is unlikely. Additionally, habitat fragmentation, in particular road construction as a result of oil and gas development, may further act as a barrier against wolf recolonization in western North Dakota. Therefore, the Proposed Action would have **no effect** on the gray wolf.

Whooping Crane (*Grus americana*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The whooping crane was listed as endangered in 1970 in the United States by the USFWS, and in 1978 in Canada. Historically, population declines were caused by shooting and destruction of nesting habitat in the prairies from agricultural development. Current threats to the species includes habitat destruction, especially suitable wetland habitats that support breeding and nesting, as well as feeding and roosting during their fall and spring migration (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007).

The July 2010 total wild population was estimated at 383 (USFWS 2010e). There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, where approximately 83% of the wild nesting sites occur (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007; USFWS 2010e). Dunn and McKenzie Counties, including the project areas, are within the primary migratory flyway of whooping cranes.

Whooping cranes probe the soil subsurface with their bills for foods on the soil or vegetation substrate (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Whooping cranes are omnivores and foods typically include agricultural grains, as well as insects, frogs, rodents, small birds, minnows, berries, and plant tubers. The largest amount of time during migration is spent feeding in harvested grain fields (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Studies indicate that whooping cranes use a variety of habitats during migration, in addition to cultivated croplands, and generally roost in small palustrine (marshy) wetlands within 1 kilometer of suitable feeding areas (Howe 1987, 1989). Whooping cranes have been recorded in riverine habitats during their migration, with eight sightings along the Missouri River in North Dakota (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007:18). In these cases, they roost on submerged sandbars in wide, unobstructed channels that are isolated from human disturbance (Armbruster 1990).

The proposed project locations all fall within the primary migratory flyway of the whooping crane, therefore the possibility of transient cranes flying over the proposed areas exists. In addition, suitable whooping crane foraging habitat was observed near the project areas. The proposed Patricia Kelly #2-1H well pad is located within an agricultural field, which is recognized as habitat preferred by whooping cranes for foraging, in combination with the proximity of the well pad to an intermittent stream, Writing Rock Coulee, which has the potential to serve as temporary roosting grounds. However, the other two proposed project locations, Myrtle Old Dog #24H and Howling Wolf #28-33H, are dominantly native, uncultivated grassland prairie at least 1.23 miles from a riverine habitat, and it is highly unlikely that a whooping crane would roost or forage within those two project locations. WPX would cease all construction activities and notify the Bureau of Indian Affairs and USFWS of a sighting, should a whooping crane be spotted within 1 mile of the project areas. As a result, the Proposed Action **may affect, but is not likely to adversely affect** the endangered whooping crane.

Piping Plover (*Charadrius melodus*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The piping plover is a small shorebird which breeds only in three geographic regions of North America: the Atlantic Coast, the Northern Great Plains, and the Great Lakes. Piping plover populations were federally listed as threatened and endangered in 1985, with the Northern Great Plains and Atlantic Coast populations listed as threatened, and the Great Lakes population listed as endangered (USFWS 1985a).

Plovers in the Great Plains make their nests on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands, and on beaches, sand bars, and dredged material islands of major river systems (USFWS 2002, 2010d). The shorelines of lakes of the Missouri River constitute significant nesting areas for the bird. Piping plovers nest on the ground, making shallow scrapes in the sand, which they line with small pebbles or rocks (USFWS 1988b). Anthropogenic alterations of the landscape along rivers and lakes where piping plover nest have increased the number and type of predators, subsequently decreasing nest success and chick survival (USFWS 2002, 2010d). The birds fly south by mid to late August to areas along the Texas coast and Mexico (USFWS 2002). The Northern Great Plains population has continued to decline despite federal listing, with population estimates of 1,500 breeding pairs in 1985 reduced to fewer than 1,100 in 1990. Low survival of adult birds has been identified as a factor (Root et al. 1992). Current conservation strategies include identification and preservation of known nesting sites, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 1988b, 2010d).

Suitable shoreline habitat for breeding and nesting plovers does not occur in the project areas and Lake Sakakawea is a minimum of approximately 1.47 river miles and 1.22 straight line miles away from the proposed well pads. Because of the close proximity of the project locations to the shoreline of Lake Sakakawea, transient individuals may visit the project areas during their migration; however, the following measures are in place to prevent any interruption of their nesting and migration: WPX would use a closed-loop drilling system and surround the proposed well pads with a 24-inch synthetically enhanced containment berm. In addition, a metal berm, designed to hold 110% of the largest tank plus one full day's production volume, would surround the tank batteries to prevent hazardous runoff or spills. Finally, all electric and fiber optic utility lines would be installed underground. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** piping plovers.

Designated Critical Habitat of Piping Plover
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The USFWS has designated critical habitat for the Great Lakes and Northern Great Plains populations of piping plover (USFWS 2002). Designated Critical Habitat for the piping plover includes 183,422 acres and 1,207.5 river miles of habitat, including areas near the proposed project locations, along the shoreline of Lake Sakakawea in Dunn and McKenzie Counties, North Dakota (USFWS 2002).

Two of the proposed project locations, Patricia Kelly #2-1H and Howling Wolf #28-33H, are in proximity of Designated Critical Habitat for the piping plover (approximately 1.45 miles and approximately 1.18 miles, respectively). Potential construction runoff or spills could create a disturbance in piping plover foraging and nesting habitat along the shoreline of Lake Sakakawea. To minimize potential disturbance on plover Designated Critical Habitat, WPX would use a

closed-loop drilling system and surround the proposed well pads with a 24-inch synthetically enhanced containment berm. In addition, a metal berm, designed to hold 110% of the largest tank plus one full day's production volume, would surround the tank battery to prevent hazardous runoff or spills. Straw rolls and matting would be placed on all high slope areas and fill would be positioned to serve as secondary containment to block the tops of drainages to prevent unwanted hydrologic movement offsite. It is unlikely that the Proposed Action would modify, alter, disturb, or affect the shoreline of Lake Sakakawea. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** Designated Critical Habitat of the piping plover.

Interior Least Tern (*Sterna antillarum*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The population of the interior least tern is listed as endangered by the USFWS (1985b). This bird is the smallest member of the gull and tern family, measuring approximately 9 inches in length. Terns remain near flowing water, where they feed by hovering over and diving into standing or flowing water to catch small fish (USFWS 2010e).

The population of interior least terns breeds in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems, where they nest in small colonies. From late April to August, terns nest in a shallow hole scraped in an open sandy area, gravel patch, or exposed flat and bare sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. The adults continue to care for chicks after they hatch. Least terns in North Dakota will often be found sharing sandbars with the piping plover, a threatened species (USFWS 2010e).

Census data indicate over 8,000 interior least terns in the population. In North Dakota, the least tern is found mainly on the Missouri River from Garrison Dam south to Lake Oahe, and on the Missouri and Yellowstone rivers upstream of Lake Sakakawea (USFWS 1990a, 2010e). Approximately 100 pairs breed in North Dakota (USFWS 2010e). Details of their migration are not known, but their winter range is reported to include the Gulf of Mexico and Caribbean Islands (USFWS 1990a, 2010e).

Loss of suitable breeding and nesting habitat for terns has resulted from dam construction and river channelization on major rivers throughout the Mississippi, Missouri, and Rio Grande River systems. River and reservoir changes have led to reduced sandbar formation and other shoreline habitats for breeding, resulting in population declines. In addition, other human shoreline disturbances affect the species (USFWS 1990a). Critical habitat has not been designated for the species (USFWS 2010e).

Current conservation strategies include identification and avoidance of known nesting areas, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 2010e).

While terns could potentially traverse the project areas as they make their way back towards the lake, it is unlikely that terns would visit the upland habitats present in the project areas. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** endangered least terns.

Pallid Sturgeon (*Scaphirhynchus albus*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The pallid sturgeon was listed as Endangered in 1990 in the United States by the USFWS (1990b). The primary factor leading to the decline of this species is the alteration of habitat through river channelization, creation of impoundments, and alteration of flow regimes (USFWS 1990b). These alterations within the Missouri River have blocked movements to spawning, feeding, and rearing areas, destroyed spawning habitat, altered flow conditions which can delay spawning cues, and reduced food sources by lowering productivity (USFWS 2007a). The fundamental elements of pallid sturgeon habitat are defined as the bottom of swift waters of large, turbid, free-flowing rivers with braided channels, dynamic flow patterns, flooding of terrestrial habitats, and extensive microhabitat diversity (USFWS 1990b).

The pallid sturgeon population which is found near the project areas occurs from the Missouri River below Fort Peck Dam to the headwaters of Lake Sakakawea and the lower Yellowstone River up the confluence of the Tongue River, Montana (USFWS 2007a). This population consists of approximately 136 wild adult pallid sturgeon (USFWS 2007a). Hatchery reared sturgeon have also been stocked since 1998. The pallid sturgeon has been found to utilize the 25 kilometers of riverine habitat that would be inundated by Lake Sakakawea at full pool (Bramblett 1996 per USFWS 2007a). Larval pallid sturgeons have also been found to drift into Lake Sakakawea. While the majority of pallid sturgeons are found in the headwaters of Lake Sakakawea, North Dakota Game and Fish have caught and released pallid sturgeon in nets set in 80 to 90 feet of water between the New Town and Van Hook area. Based on this information, pallid sturgeon could be found throughout Lake Sakakawea (personal communication, email from Steve Krentz, Pallid Sturgeon Project Lead, U.S. Fish and Wildlife Service, to Mike Cook, Aquatic Ecologist, SWCA Environmental Consultants, September 3, 2010).

Suitable habitat for pallid sturgeon does not occur in the project areas, and Lake Sakakawea is a minimum of 1.22 straight line miles away from the proposed project areas. Potential pollution and sedimentation occurring within the project areas are concerns for downstream populations of endangered pallid sturgeon. Activities associated with the construction, production, or reclamation of the proposed project areas are not anticipated to adversely affect water quality and subsequently the pallid sturgeon. In addition, straw rolls and matting would be placed on all high slope areas, in addition to a 2-foot synthetically enhanced berm surrounding the well pads and secondary containment in the form of fill placed into drainages to minimize any potential impact on pallid sturgeon habitat. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** pallid sturgeon.

Dakota Skipper (*Hesperia dacotae*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The Dakota skipper is a small butterfly with a 1-inch wingspan and is found primarily in undisturbed native tall grass and upland dry Northern mixed grass prairie areas with a high diversity of wildflowers and grasses (Committee on the Status of Endangered Wildlife in Canada 2003). The Dakota skipper appears to require a range of precipitation-evaporation ratios between 60 and 105 and a soil pH between 7.2 and 7.9 (McCabe 1981). Larvae feed on grasses, favoring little bluestem. Adults commonly feed on nectar of flowering native forbs such as harebell

(*Campanula rotundifolia*), wood lily (*Lilium philadelphicum*), and purple coneflower (*Echinacea angustifolia*). The species is threatened by conversion of native prairie to cultivated agriculture or shrublands, over-grazing, invasive species, gravel mining, and inbreeding (USFWS 2005). Suitable habitat does exist within the proposed project areas and the potential to fragment Dakota skipper habitat exists with the creation of new access roads through previously uncultivated prairie. However, it is not anticipated that construction activities would negatively impact the species as long as internal reclamation is conducted as soon as the lifespan of the well pads is complete; in addition to the implementation of a noxious weed management program. Therefore, the Proposed Action **may affect, but is not likely to adversely affect** this species. The use of best management practices and conservation guidelines (USFWS 2007b) during construction and operation and immediate reclamation of short-term disturbance should decrease direct, indirect, and cumulative impacts to this species.

Sprague's Pipit (*Anthus spragueii*)
Affect Determination: May Affect, Is Not Likely to Adversely Affect

The Sprague's pipit is a small passerine bird that is native to the North American grasslands. It is a ground nester that breeds and winters on open grasslands and feeds mostly on insects and spiders and some seeds. The Sprague's pipit is closely tied with native prairie habitat and breeds in the north-central United States in Minnesota, Montana, North Dakota, and South Dakota as well as south-central Canada (USFWS 2010f). Wintering occurs in the southern states of Arizona, Texas, Oklahoma, Arkansas, Mississippi, Louisiana, and New Mexico. Sprague's pipit are not known to occur within the project areas; however, suitable habitat does occur. The dominant vegetation found at the proposed Myrtle Old Dog #24H and Howling Wolf #28-33H well pad locations was uncultivated, native prairie grasslands, which is possible nesting and foraging habitat for the Sprague's pipit. In addition, the creation of an access road and well pad through previously uncultivated prairie would serve to fragment possible habitat. However, by placing multiple wells on a single pad, utilizing previous roads to minimize creation of new access roads, as well as the immediate reclamation of the well pad after its lifespan is complete, the potential to adversely affect the Sprague's pipit is greatly minimized. The Proposed Action **may affect, but is not likely to adversely affect** this species. The use of best management practices and conservation guidelines (USFWS 2007b) during construction and operation and immediate reclamation of short-term disturbance should decrease direct, indirect, and cumulative impacts to this species.

MIGRATORY BIRD TREATY ACT / THE BALD AND GOLDEN EAGLE PROTECTION ACT

Bald Eagle (*Haliaeetus leucocephalus*)
Status: Delisted in 2007; protected under the MBTA and BGEPA
Effects of Project: No adverse effects anticipated

Suitable nesting or foraging habitat for bald eagles includes old growth trees relatively close (usually less than 1.24 miles [Hagen et al. 2005]) to perennial water bodies. The project areas do not contain old growth trees and are located at a minimum of approximately 1.22 straight line miles from Lake Sakakawea. No suitable nesting habitat was observed within 0.5 mile line-of-sight during the field surveys. Therefore, no adverse effects are anticipated. However, the possibility of transient, flying bald eagle individuals traversing the project areas does exist.

Golden Eagle (*Aquila chrysaetos*)
Status: Not Listed; protected under the MBTA and BGEPA
Effects of Project: No adverse effects anticipated

No suitable nesting habitat was observed during the field surveys; however, transient golden eagles may occur within or near the project areas. The closest known golden eagle nest occurs approximately 1.33 miles south of the proposed Howling Wolf #28-33H well pad location. 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 suitable nesting habitat. However, no primary or secondary indication of golden eagle presence, including nests, was observed within or near the project areas during the field survey. Therefore, the Proposed Action is unlikely to cause any adverse effects to golden eagles.

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U.S. FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
ND FIELD OFFICE

Project as described will have no significant impact on fish and wildlife resources. No endangered or threatened species are known to occupy the project area and/or are not likely to be adversely affected. IF PROJECT DESIGN CHANGES ARE MADE, PLEASE SUBMIT PLANS FOR REVIEW.

8-8-12 Jeffrey K. Towner
Date Jeffrey K. Towner
Field Supervisor

June 28, 2012

Jeffrey K. Towner
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, ND 58501

RE: Request for Concurrence Letter

Dear Mr. Towner,

The Bureau of Indian Affairs (BIA) is preparing an environmental assessment (EA) under the National Environmental Policy Act (NEPA), in cooperation with the Bureau of Land Management (BLM), the latter of which regulates the approval process associated with the drilling and subsequent extraction of minerals held in trust by the BIA. The Proposed Action includes approval by the BIA for the construction, drilling, completion, and production of three developmental oil and gas well pads and their associated wells, access roads, gathering pipelines, and electric and fiber optic utility lines.

WPX Energy Williston, LLC (WPX) proposes to develop three locations, referred to as the Myrtle Old Dog #24H, Patricia Kelly #2-1H, and Howling Wolf #28-33H well pad locations, on the Fort Berthold Indian Reservation (Reservation). The proposed surface locations, illustrated in Figures 1 through 4, are:

- **Myrtle Old Dog #24H:** SW¼ SW¼ of Section 13, Township (T) 149 North (N), Range (R) 94 West (W), approximately 1.52 miles south of Mandaree in McKenzie County, North Dakota.
- **Patricia Kelly #2-1H:** SW¼ NE¼ of Section 3, T150N, R94W, approximately 7.22 miles north of Mandaree in McKenzie County, North Dakota.
- **Howling Wolf #28-33H:** SE¼ SE¼ of Section 21, T147N, R92W, approximately 19.07 miles southeast of Mandaree in Dunn County, North Dakota.

We are requesting a concurrence letter be sent before July 28, 2012, so that it may be addressed in the final EA. Please send the concurrence letter to the addresses below.

SWCA Environmental Consultants
Courtney Lafferty, Environ. Specialist
116 North 4th Street, Suite 200
Bismarck, North Dakota 58501
(701) 258-6622
clafferty@swca.com

Bureau of Indian Affairs
Marilyn Bercier, Regional Environmental Scientist
115 4th Avenue SE
Aberdeen, South Dakota 57401
(605) 226-7656
Marilyn.Bercier@bia.gov

Sincerely,

Courtney Lafferty
Environmental Specialist
clafferty@swca.com

Enclosures: Attachment 1

APPENDIX E
General Scoping Letter

SWCA
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.

Bismarck Office
116 North 4th St, Ste 200
Bismarck, ND 58501
701.258.6622
701.258.5298
www.swca.com

June 18, 2012

Dear Interested Party:

The Bureau of Indian Affairs (BIA) is preparing an environmental assessment (EA) under the National Environmental Policy Act (NEPA) in cooperation with the Bureau of Land Management (BLM). The proposed action includes approval by the BIA for the construction, drilling, completion, and production of two developmental oil and gas well pads, to be located on the Fort Berthold Indian Reservation, by WPX Energy Williston, LLC (WPX). The BLM regulates the approval process associated with the drilling and subsequent extraction of minerals held in trust by the BIA. The proposed locations are:

- **Myrtle Old Dog #24H: SW¼ SW¼ of Section 13, Township (T) 149 North (N), Range(R) 94 West (W), approximately 1.52 miles south of Mandaree in McKenzie County, North Dakota.**

- **Patricia Kelly #2-1H: SW¼ NE¼ of Section 3, T150N, R94W, approximately 7.22 miles north of Mandaree in McKenzie County, North Dakota.**

The Myrtle Old Dog #24H developmental oil and gas well pad would be located within its own 640-acre spacing unit, while the Patricia Kelly #2-1H developmental oil and gas well pad would be located within its own 1,280-acre spacing unit. These well pads would be positioned to utilize existing roadways for access to the greatest extent possible. The drilling of these well sites is being proposed to begin as early as September 18, 2012.

The associated facilities required for the project would include roads, pipelines, electric and fiber optic utility lines, production facilities (production tanks), and equipment storage facilities. In general, oil would be stored on location in tank batteries and transported through pipelines to the nearest processing plant or sales point. If necessary, trucks may be used to transport oil from the well location to processing plants or sales points. Produced water would be transported by pipeline to approved water disposal wells. Any gas produced from these wells would initially be flared until a gas pipeline could be planned, permitted, and constructed, if necessary. Project development would result in the construction of approximately 2.43 miles of new or upgraded/improved roads to access the wells and well pad. Existing highways and arterial roads would provide the main access to the project area.

To ensure that all potential effects on social, economic, and environmental issues are analyzed accurately, we solicit your views and comments on the proposed action, pursuant to Section 102(2) (D) (IV) of NEPA, as amended. We are interested in developments proposed or underway that should be considered in connection with the proposed project. We also ask your assistance in

identifying any property or resources that you own, manage, oversee, or otherwise value that might be adversely impacted.

Please send your replies and requests for additional project information to:

Courtney Lafferty, Environmental Specialist
SWCA Environmental Consultants
116 North 4th Street, Suite 200
Bismarck, North Dakota 58501
(701) 258-6622
clafferty@swca.com

Comments should be submitted before July 18, 2012; so that they may be addressed in the EA. Questions for the BIA can be directed to Marilyn Bercier, Regional Environmental Scientist, or Mark Herman, Environmental Engineer, at (605) 226-7656.

Sincerely,

Courtney Lafferty