

NORTH DAKOTA PUBLIC SERVICE COMMISSION

APPLICATION OF
VANTAGE WEST SPUR LATERAL PIPELINE PROJECT
for
CERTIFICATE OF CORRIDOR COMPATIBILITY

Vantage Pipeline US LP
April 2015



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SECTION A. DESCRIPTION OF PROPOSED FACILITY

A.1. Describe the type of facility addressed in this application. The description shall include the purpose of the facility and the technology to be employed.

Vantage Pipeline US LP (Vantage) is proposing to construct and operate approximately 47.3 miles of new, high vapor pressure (HVP) steel pipeline from a natural gas processing plant near Williston, North Dakota to an existing pipeline system near Stady, North Dakota, which currently transports ethane to the Alberta petrochemical industry. The proposed Vantage West Spur Lateral Pipeline (West Spur) would include the construction of approximately 47.3 miles of new 8-inch diameter pipeline in North Dakota. The general location of the project is shown in Exhibit A and includes a 49.1 mile alternative pipeline route.

Natural gas production in North Dakota is now at a level that makes it economically feasible to extract ethane from the natural gas and sell it to ethane consumers. The purpose of the Vantage West Spur Lateral Pipeline is to efficiently transport ethane from the Stateline II Gas Processing Plant owned by ONEOK Partners, LP near Williston, North Dakota to the existing Vantage ethane pipeline system near Stady, North Dakota. The Vantage Pipeline supplies ethane from natural gas facilities in the Williston Basin to meet the market demand created by the petrochemical industry in Alberta, Canada. Vantage has entered into a long-term agreement with NOVA Chemicals Corporation (NOVA) to transport ethane from Stateline II Plant to NOVA's Joffre Petrochemical Complex in Alberta. The Vantage West Spur Lateral Pipeline would provide ethane to this system.

A.2. Describe the type, source, and final destination of the product to be transmitted by the proposed facility.

A.2.1 Type

The proposed Vantage West Spur Lateral Pipeline will transport liquid ethane, a component of natural gas. Ethane is used as a feedstock for the world-scale petrochemical facilities located in the province of Alberta where it is converted to ethylene. In Alberta, NOVA's Joffre Petrochemical Complex will convert the ethane to ethylene, which is a building block for a wide range of consumer and industrial products such as plastics, antifreeze, rubber, detergents, and solvents.

A.2.2 Source

The primary source of supply for the ethane is the Stateline II Plant located in the Williston Basin of northwestern North Dakota.

A.2.3 Final Destination

The Vantage West Spur Lateral Pipeline would transport ethane to an existing pipeline, the Vantage Pipeline. The Vantage Pipeline then takes the ethane to the Alberta Ethane Gathering System (AEGS), south of Empress, Alberta, Canada. AEGS would transport the ethane to NOVA's Joffre Petrochemical Complex.

A.3. Size and Design

A.3.1 Provide a description of the size and design of the pipeline facility.

A.3.1.a Width of right-of-way

Following construction, Vantage would generally maintain a 30-foot-wide permanent right-of-way for operations and maintenance. A total of 47.3 miles of new right-of-way would be needed for construction within North Dakota.

Construction of the pipeline would generally require a 100-foot-wide right-of-way, which is made up of 30 feet of permanent right-of-way and 70 feet of temporary work space, to allow for temporary storage of topsoil and spoil, and to accommodate safe operation of construction equipment. In certain places, such as road crossings or greater than 45 degree bends, additional temporary work space will required.

During construction, Vantage would temporarily use off-right-of-way areas for pipe and materials storage. In addition, construction contractors would require off-right-of-way areas to park equipment and stage construction activities.

Public roads would typically be used to gain access to the construction right-of-way. In areas where public roads are limited, existing privately owned roads may be used to provide access to the construction right-of-way. If neither public nor privately owned roads are available, construction access would be obtained through the temporary right-of-way. Permanent access to block valve locations would require roadways constructed from existing public and private roads. The lengths of permanent access roads are minimized by locating the block valves close to existing roads. Use of private access roads, modifications to existing non-private roads, and construction of any new access roads would require obtaining landowner permission, local county permission and environmental surveys prior to use.

A.3.1.b Estimated distance between surface structures

Two new above-ground mainline block valves would be located approximately 15 miles apart along the pipeline route in North Dakota. Mainline valves would be installed at locations as necessary to facilitate system operations. In addition, a block valve and trap will be constructed at either end of the pipeline at existing facilities.

Installation of the mainline valve sites would be accommodated within the permanent and temporary workspace obtained for the pipeline construction. The valve sites would be fenced. The valve sites are located next to existing roads; therefore, access to most of the valve sites for pipeline operations would be by short new permanent access roads off the main road. Also the sites would preferably be near existing powerlines close, on flat terrain, and have cooperative landowners.

A.3.1.c Pipe size

The Vantage West Spur Lateral Pipeline will consist of 8-inch diameter underground HVP steel pipe.

A.3.1.d Approximate length of facility

Vantage proposes to construct and operate 47.3 miles of pipeline from ONEOK Partners' Stateline II Plant near Williston, North Dakota to an existing pipeline, the Vantage Pipeline, near Stady, North Dakota.

Ownership of land crossed by the Vantage West Spur Lateral Pipeline route is identified in Table 1.

Table 1. Ownership of Lands Crossed by the Vantage West Spur Lateral Pipeline Project Route.

LAND TYPE/LOCATION	PREFERRED ROUTE		ALTERNATIVE ROUTE	
	CROSSING LENGTH (MILES)	PERCENT OF ROUTE	CROSSING LENGTH (MILES)	PERCENT OF ROUTE
Federal lands	0.0	0.0	0.0	0.0
State lands	0.5	1.06%	1.03	2.10%
County lands	0.0	0.0	0.0	0.0
Incorporated areas	0.0	0.0	0.0	0.0
Private land outside incorporated	46.84	98.94%	48.07	97.90%
Total	47.3	100%	49.1	100%

A.3.1.e Maximum design operating pressure and temperature

The steel pipeline will be in HVP service with a maximum operating pressure of 2,220 pounds per square inch (psi). Operating temperatures adjacent to the Stateline II Plant will range from 40 to 100 degrees Fahrenheit. The majority of the pipeline, which extends from the Stateline II Plant to Stady, North Dakota, will operate between 35 and 45 degrees Fahrenheit.

A.3.1.f Maximum flow rate

The maximum design flow rate is 30,000 barrels per day. The actual flow rate may vary depending on the operation conditions on the Vantage Pipeline.

A.3.1.g Number and general location of above-ground associated facilities, compressors and pumping stations

Above-ground facilities for the Vantage West Spur Lateral Pipeline in North Dakota include:

- an internal inspection tool launcher located in the ONEOK Partners, Stateline II Plant,
- a custody transfer meter station in the Stateline II Plant site before the ethane enters the pipeline, and
- two new above-ground mainline block valves (Figure 1). A block valve and trap will be constructed at either end of the pipeline at the two existing facilities.
- An internal inspection tool receiver located at the Vantage Pipeline block value (BV-05) tie-in.

Exhibit D: Route Map illustrates proposed block valve locations along the route.

A.4. Time Schedule

A.4.1 Obtaining the Certificate of Corridor Compatibility

Vantage respectfully requests its certificate approval from the North Dakota Public Service Commission in the second quarter of 2015.

A.4.2 Obtaining the Route Permit

A route application will be submitted by Vantage by the beginning of the first quarter of 2015. Vantage respectfully requests its certificate approval from the North Dakota Public Service Commission in the second quarter of 2015.

A.4.3 Completing Right of way Acquisition

Vantage has contacted all of its affected landowners for permission to enter their respective properties to perform civil, cultural and biological surveys for the West Spur Lateral Pipeline Project. To date, Vantage has received approval from 100% of its landowners through either verbal approval or signed survey consent forms (Exhibit O). Consents on reroute areas were obtained verbally. Land agents have met with all area landowners several times. Out-of-area landowners have been contacted via phone and email.

Vantage has begun its landowner negotiations for acquisition of right-of-way easement rights. As stated earlier, Vantage has purchased in fee, certain tracts of land needed for its facilities.

A.4.4 Construction Start Date

The proposed construction start date is immediately upon receipt of appropriate approvals. The expected construction start date is between the end of the second quarter and the beginning of the third quarter of 2015 and extend into the first quarter of 2016.

A.4.5 Construction Complete

Vantage estimates the construction completion date to be in the first quarter of 2016.

A.4.6 Testing Operations

The estimated testing and commissioning of the new pipeline and associated facilities is the fourth quarter of 2015 or the first quarter of 2016.

A.4.7 In-service Date / Commencing Operations

Vantage estimates the in-service date to be in the first or second quarter of 2016.

VANTAGE WEST SPUR LATERAL PIPELINE PROJECT
 NORTH DAKOTA PSC APPLICATION
 Certificate of Corridor Compatibility – April 2015
 Docket No. PU-15-XXX

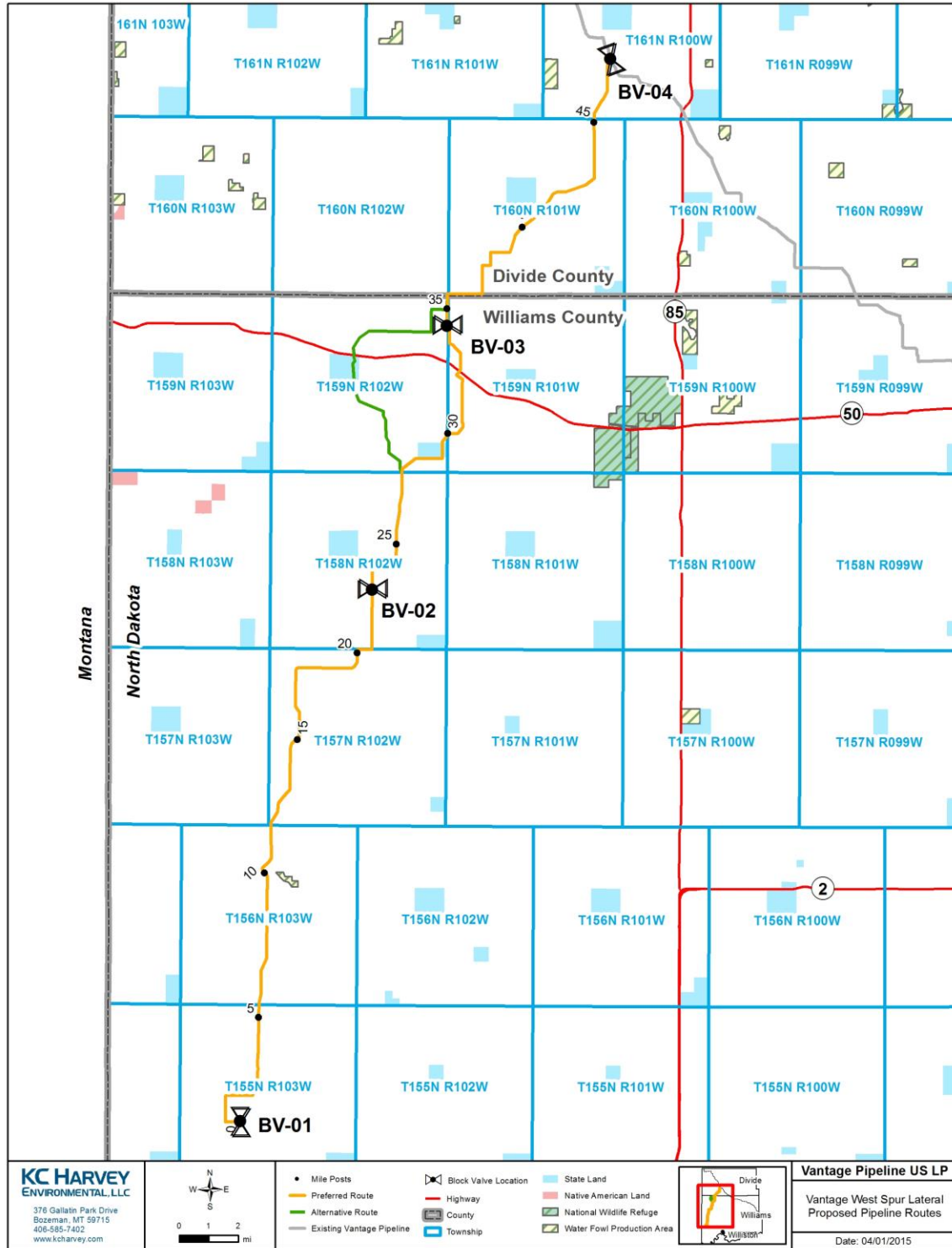


Figure 1. Block value locations.

SECTION B. STUDIES

B.1. Cultural Resource Investigations

B.1.1 Project Regulatory Agencies

The North Dakota Public Service Commission (PSC) is the lead regulatory agency for the Vantage West Spur Lateral Pipeline project. The PSC relies on the State Historical Society of North Dakota (SHSND) to address cultural resource issues. The SHSND is responsible for protecting historic properties in North Dakota. The Archaeology and Historic Preservation Division (AHPD) of the SHSND is responsible for preservation and interpretation of antiquities at the state level. The North Dakota State Historic Preservation Office (NDSHPO) within the AHPD reviews all cultural resource aspects of all projects requiring state or federal approval within the state, evaluates cultural resources identified during preconstruction surveys, reviews protection, preservation, and mitigation measures proposed and implements the permitting process.

B.1.2 Cultural Resource Laws, Codes and Guidelines

The Area of Potential Effect (APE) for cultural resources is defined as the geographic area or areas within which the proposed action may directly or indirectly cause changes in the character or use of historic properties. The APE for direct impacts is 45 feet. For secondary impacts, the APE is 100 feet.

Cultural resources are addressed by North Dakota state laws enacted to identify, evaluate, interpret and protect these resources associated with state funded or permitted activities. Laws addressing cultural resources are presented in the North Dakota Century Code (NDCC). Some state agencies have also developed specific rules or guidelines regarding the implementation of state cultural resource laws, which are presented in the North Dakota Administrative Code (NDAC).

Laws regarding cultural resources are covered under Title 23 and Title 55 of the NDCC. Title 23 addresses burials and human remains. Title 55 addresses all other aspects of cultural resource law. Noted here are several chapters of these titles relevant to the Vantage West Spur Lateral Pipeline project. Human burial sites, human remains and burial goods are protected under NDCC 23-06-27, including marked and unmarked prehistoric and historic burials. Prehistoric and historic sites and artifacts are protected under NDCC 55-02-07. The locational data of prehistoric and historic sites is protected and restricted under NDCC 55-02-07.1. Permits are required to investigate, evaluate, excavate or otherwise record cultural resources on state land, or excavate cultural resources on private land, under NDCC 55-03-01.1. All state agencies, including the PSC, are required to cooperate in the preservation of prehistoric and historic sites under NDCC 55-10-09. North Dakota recognizes the provisions of the National Historic Preservation Act of 1966 (Public Law 89-665 [16 U.S.C. 470 et seq.] as amended) under NDCC 55-10-11, which creates the SHPO within the SHSND and outlines responsibilities for administering the State Historic Preservation Program in cooperation with federal and state agencies, local governments, and private organizations and individuals.

The authority of state administrative agencies, such as the SHSND and PSC, to adopt administrative rules is provided under NDCC 28-32. Administrative rules regarding cultural resources are included under Title 40 and Title 69 of the NDAC. Title 40 is the State Historical Board and Title 69 is the Public Service Commission. Noted here are several chapters of these titles relevant to the Vantage West Spur Lateral Pipeline project. Rules for permitting cultural resource investigations are presented in NDAC 40-02-02.

Rules for protecting prehistoric and historic human burial sites, human remains, and burial goods are presented in NDAC 40-02-03. Rules for the exclusion or avoidance of cultural resources in energy transmission corridors are presented in NDAC 69-06-08.

Additional guidelines and information for cultural resource inventories and the identification, documentation and evaluation of cultural resources in North Dakota are provided in a variety of publications issued by the SHSND. Five publications relevant to the Vantage West Spur Lateral Pipeline project are noted here. An overview of North Dakota cultural resource preservation planning and objectives is presented in *Historic Preservation in North Dakota, 2010-2015: A Statewide Comprehensive Plan* (North Dakota State Historic Preservation Office 2009). Procedures for undertaking a cultural resource inventory in North Dakota are presented in *North Dakota SHPO Guidelines Manual for Cultural Resource Inventory Projects* (SHSND 2012). Procedures for recording and evaluating cultural sites are presented in three documents: *NDCRS Site Form Training Manual: Archeological Sites* (Snortland et al. 2009); *NDCRS Site Form Training Manual: Architectural Sites* (Snortland et al. 2009); and *NDCRS Site Form Training Manual: Historical Archeological Sites* (Snortland et al. 2009). The SHSND also relies on NPS guidelines for statewide cultural resource planning, evaluation and preservation.

Specifically, NDCC 55-02-07 protects significant prehistoric and historic sites in North Dakota. Also, NDCC 55-10-11 recognizes the National Historic Preservation Act of 1966, as amended, which under Section 101(b)(3) calls for the SHPO to identify eligible historic properties and assist other state agencies and local governments in carrying out historic preservation responsibilities. Additionally, NDAC 69-06-08 states historic sites must be excluded or avoided in the consideration of an energy transmission corridor, such as a pipeline, unless no reasonable alternative can be demonstrated. These mandates require the lead state agency with jurisdiction over a state undertaking (i.e., a project, activity, or program that is funded by a state agency or that requires a state permit, license, or approval) to consider effects on historic properties before that undertaking occurs. Historic properties are defined as prehistoric or historic districts, sites, buildings, structures, or objects which are of local, state or national significance. Under this definition, historic and archeological resources may be present within a project's APE, but are not historic properties if they are determined not significant by the SHPO. For the purposes of this section, the term "historic resource" refers to buildings, structures, objects, and districts that may or may not be significant. Likewise, the term "archeological resource" refers to a site that may or may not be significant.

To be eligible for protection under NDCC 55-02-07, a property generally must be 50 years of age or older, retain historic integrity, and be significant for its association with historical events, and/or association with important persons, and/or exhibit important architectural or artistic character, and/or have the ability to provide significant information about the prehistory or history of the area. There are provisions for listing cultural resources of more recent origin if they are of "exceptional" importance. The intent of NDCC 55-02-07 is for state agencies to take into account the effects of a proposed undertaking on any historic properties situated within the APE and to consult with the SHPO, local governments, and any other interested parties regarding the proposed undertaking and its potential effects on historic properties. NDCC 55-02-07, NDCC 55-10-11 and various SHSND and NPS publications establish a process of identifying and evaluating significant historic properties that may be affected by the proposed undertaking; assessing the undertaking's effects on those resources; and engaging in consultation that seeks ways to avoid, reduce, or mitigate any adverse effects on significant properties. Adverse effects include, but are not limited to, destruction or alteration of all or part of a property; isolation from or

alteration of its surrounding environment; introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting; transfer or sale of a state owned property without adequate conditions or restrictions regarding preservation, maintenance, or use; and neglect of a property resulting in its deterioration or destruction. All state agencies are required to cooperate with historic preservation under NDCC 55-10-09.

Human burials, human remains, and burial goods are protected under NDCC 23-06-27 and NDAC 40-02-03. These regulations apply to both unmarked and marked graves, and include inadvertent disinterment of human remains. All human remains and burial goods shall be treated as indicated in EPP Section 8.10.

As discussed below, cultural resources associated with past human activity were identified during investigation of the Vantage West Spur Lateral Pipeline APE. These cultural resources are classed as sites or isolated finds. In North Dakota, “a cultural resource site is defined as a location of past human activity that took place over 50 years ago and which left physical traces of activity in the form of (1) an intact cultural feature, (2) six or more artifacts found within about 60 meters of one another, and/or (3) an intact subsurface cultural deposit regardless of the number of artifacts” (SHSND 2012:18). An isolated find is “A location of five or fewer artifacts and identified by the archaeologist(s) as representing an area of very limited past activity may be recorded as an isolated find. In all cases of identifying a location as an isolated find, the archaeologist(s) should consider whether the location has potential to contain buried artifacts” (SHSND 2012:17).

Sites, Isolated Finds and Site Leads are typically divided into prehistoric and historic properties. Prehistoric resources include physical properties resulting from human activities predating written records. They typically consist of isolated artifacts and sites. Prehistoric isolates consist of five or less artifacts within a 50 meter (m) square area. Prehistoric sites contain artifacts (e.g., stone tools and ceramic sherds), features (e.g. campfires and tipi rings), and plant and animal remains that exhibit evidence of cultural utilization. Prehistoric site types common to the region include lithic scatters, cultural material scatters, animal kill/processing sites, and stone feature sites.

Historic resources consist of physical properties that were created after the advent of written records in the region (post-1805). Historic property categories include architectural buildings (e.g. log cabins, houses), architectural structures (e.g., dams, bridges) and archeological features (e.g. trails, trash dumps). Historic cultural resources expected in the vicinity of the project area include buildings, homesteads, ranches, coal mines, transportation features, and culture material scatters.

Methods

Cultural resource studies for the Vantage West Spur Lateral Pipeline consisted of both a Class I and Class III investigation. The Class I investigation entailed a review of local histories, examination of historic maps and a review of previous manuscripts and site forms. The Class I study incorporated all sections located within one mile of each pipeline centerline.

The Class III inventory was aimed at locating and recording all historic properties and archeological resources that have surface and exposed-profile indications. This was accomplished through systematic pedestrian inspection of the defined 500 foot survey corridor using parallel transects spaced no more than 30 m apart. The pipeline centerline was ascertained from shapefiles downloaded to global positioning system (GPS) units. Site forms of previously recorded sites accompanied the field crew, and the location of the previously documented sites, isolated finds, and site leads were placed on a GPS unit to aid

identification in the field. As reroutes were identified, a pedestrian survey was conducted to ensure all possible areas were investigated. The investigation did not include subsurface testing and no Native American representative participated in the survey.

To evaluate site significance, the SHPO utilizes National Park Service's *National Register Bulletin 15, How to Apply the National Register Criteria for Evaluation* (NPS 1997). Additional guidance is provided by *Farms in North Dakota: A Historic Context* (SHSND 2014a) and *Railroads in North Dakota, 1872-1956* (Schmidt and Vermeer 2009). To be significant, a property generally must be greater than 50 years of age and meet at least one of the following criteria:

Criterion A: Properties that are associated with events that have made a significant contribution to the broad patterns of our history.

Criterion B: Properties that are associated with the lives of persons significant in our past.

Criterion C: Properties that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

Criterion D: Properties that have yielded, or may be likely to yield, information important to prehistory or history.

Properties are also evaluated on integrity, which is defined by seven aspects or qualities: location, design, setting, materials, workmanship, feeling, and association. Location is important to understanding why the property was created or why something happened. Design includes elements of organization of space, proportion, scale, technology, ornamentation, and materials. Setting is the character of the place in which the property is situated as well as its relationship between other properties, other features, or open space. Materials are the physical elements that were combined or deposited during a particular period and in a particular pattern or configuration to form a historic property. Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. Association is the direct link between an important historic event or person and a historic property (NPS 1997).

Results

The files search conducted as part of the Class I investigation indicates 21 previously documented studies were conducted within or adjacent to the Vantage West Spur study area. The majority of the inventories were conducted for pipelines, but other projects include gravel pits, well pads, a power station, a transmission line, an underground cable line, a waterline, highway maintenance, and a coalmine study. Eleven of the previous projects overlap the study corridor.

The files search indicates there are 22 previously recorded sites within one mile, but outside, the survey corridor. Eleven are prehistoric, ten are historic and one has both historic and prehistoric components. All of the prehistoric sites contain stone features (i.e. stone rings, cairns, alignments). The historic sites consist of three farmsteads, two churches, one school, one foundation, and three culture material scatters. The database also notes the presence of 25 previously documented site leads or isolated finds. They

consist of eight historic coalmines, three historic post offices, two historic cultural material scatters, one historic dump, one historic machinery, and 10 prehistoric cultural material scatters. The precise location for several site leads is not available, so generalized site boundaries are drawn based on the legal locations provided. Eight of these generalized boundaries overlap the study corridor.

The Class III cultural resource inventory identified 24 sites (Table 2). These consist of 14 prehistoric sites, nine historic sites, and one multicomponent site. All of the prehistoric sites contain stone features such as stone rings, cairns and alignments. The historic sites are made up of a railroad, a historic school, historic farmsteads, a historic depression, and historic material scatters. The multicomponent site (32WI1663) contains prehistoric stone rings. In addition to the sites, the investigation identified 10 isolated finds consisting of less than five artifacts or isolated farm implements. The investigation observed no cultural districts or rural historic landscapes. Although there are several sites sharing similar attributes, the sites are neither concentrated nor sufficiently linked by theme to be identified as districts. Likewise, the project area is rural, but lacks evidence for a planned or designed development that is required for a historic landscape.

The significance of the prehistoric sites is unknown. Further investigation is needed to ascertain whether the sites have sufficient materials to address pertinent archaeological questions, and can be placed within a meaningful temporal or cultural context. The portion of the railroad within the inventory corridor is recommended a non-contributing (i.e. not significant) element of the otherwise unevaluated site. The remaining historic components are recommended not significant. Isolated Finds are not significant.

Since the 2014 and 2015 field seasons, Vantage rerouted 25 miles of the pipeline. These reroutes will avoid 22 of the sites. Two sites are still within the 500-ft survey corridor. They consist of the railroad (32WI0481) and the Augedahl School (32WI1667), both of which are determined not significant. The school is at least 45 feet (15 m) from the temporary 70-ft wide construction corridor.

To avoid secondary impacts associated with artifact collecting and vandalism from/to any of the identified sites, Vantage would limit all activities by workers to the defined temporary construction corridor. This would provide a 45-foot buffer to the identified sites and would minimize the visibility of all but the standing structures and buildings. The construction of the pipeline and the associated facilities would constitute only a temporary visual impact to significant sites outside the construction corridor.

A cultural resource investigation is still needed for the newly defined reroutes, the work areas, and ancillary facilities. Fieldwork examining the reroutes are currently underway. Based on the results of the 2014 Class III inventory, it is anticipated the investigation will encounter nine prehistoric stone feature sites and six historic sites. Vantage anticipates they will successfully avoid direct and indirect impacts to these sites. The 500-ft corridor and the ability to neck-down to a 50-ft construction corridor will allow the pipeline to avoid the majority of sites. When moving the alignment is not an option, Vantage shall drill beneath the site, thereby avoiding impacts to cultural materials. The NDSHPO will review the results of all field investigations and approve all avoidance measures.

It is unlikely ground disturbing activities will impact deposits containing paleontological resources because the bedrock of the region is covered by Quaternary deposits, chiefly glacial drift, which rarely contains fossils.

Table 2. Summary of sites identified during field inventory.

Site Number	Site Type	Determination of Significance	Within Current ROW	Comments
32WI0481	Historic Railroad	Not Significant	Yes	No further work
32WI1657	Stone Features (4 rings)	Unknown	No	Abandoned Route
32WI1658	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32WI1659	Stone Features (3 rings, 4 arcs, 2 alignments)	Unknown	No	Abandoned Route
32WI1660	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32WI1661	Stone Features (2 rings)	Unknown	No	Abandoned Route
32WI1662	Stone Features (2 rings)	Unknown	No	Abandoned Route
32WI1663	Multicomponent: Stone Features (3 rings, 1 cairn) and Historic Mine	Prehistoric component unknown, Historic Component not significant	No	Abandoned Route
32WI1664	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32WI1665	Stone Features (5 rings, 1 arc)	Unknown	No	Abandoned Route
32WI1666	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32WI1667	Historic School (Augedahl School)	Not Significant	Yes	No further work
32WI1668	Historic Farmstead	Not Significant	No	Abandoned Route
32WI1669	Historic Cultural Material Scatter	Not Significant	No	Abandoned Route
32WI1670	Historic Depression	Not Significant	No	Abandoned Route
32WI1671	Historic Farmstead	Not Significant	No	Abandoned Route
32WI1672	Historic Cultural Material Scatter	Not Significant	No	Abandoned Route
32WI1673	Historic Cultural Material Scatter	Not Significant	No	Abandoned Route
32DV0146	Stone Features (2 ring)	Unknown	No	Abandoned Route
32DV0147	Stone Features (3 rings, 1 arc)	Unknown	No	Abandoned Route
32DV0148	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32DV0149	Stone Features (11 cairns, 1 ring, 1 alignment)	Unknown	No	Abandoned Route
32DV0150	Stone Feature (1 cairn)	Unknown	No	Abandoned Route
32DV0151	Historic Cultural Material Scatter	Not Significant	No	Abandoned Route

B.2. Wetland Assessment

Wetlands are defined in federal Executive Order 11990 as “Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

B.2.1 U.S. Army Corps of Engineers (USACE)

According to Corps of Engineers Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010), one positive indicator (except in certain situations) from each of three elements must be present in order to make a positive wetland determination, which are as follows:

- Greater than 50 percent dominance of hydrophytic plant species.
- Presence of hydric soil.
- The area is either permanently or periodically inundated, or soil is saturated to the surface during the growing season of the dominant vegetation.

Vantage conducted a conservative and approximate inventory of wetland boundaries along the 47.3-mile long, 500-foot-wide Vantage West Spur Lateral Pipeline corridor (and the 49.1 mile alternative route) based upon visible hydrology and vegetation indicators. Preliminary correspondence with the U.S. Army Corps of Engineers indicated that formal wetland delineations were not necessary for pipeline route planning. Rather, a conservative and approximate wetland boundary would be appropriate for impact avoidance and minimization efforts. However, full wetland delineations were completed on a portion of the wetlands to be able to characterize the features.

The wetland investigation resulted in the identification and mapping of wetlands within the 500 ft survey corridor of the preferred and alternative routes. A total of 62 wetlands are located within the preferred 500-foot Vantage West Spur Lateral Pipeline survey corridor (69 wetlands in the alternative route). Type 1 PEM and PFO wetlands, and one Type 6 PSS wetland were observed in the survey corridor. No Type 2, 3, 4 or 5 wetlands occur in the study corridor. Table 3 summarizes the identified wetlands within the corridor by wetland type. Each wetland type, and the number of occurrences, are discussed in more detail below.

Type 1—Palustrine Emergent, Seasonally Flooded Basins. A total of 61 Type 1 wetlands totaling 18.9 acres were identified in the preferred route survey corridor, and there were 68 Type 1 wetlands totaling 22.6 acres were identified in the preferred route survey corridor (Table 3, Exhibit F.2). One Type 1 wetland was a PFO surrounding a PEM wetland, and the remaining Type 1 wetlands were PEM. Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season. This type of wetland is very common throughout the prairie pothole region. Many of the seasonally flooded basins observed in the project area were cultivated with a variety of crops, although those basins that were fallow developed some wetland vegetation. Dominant vegetation in the seasonally flooded basins included water smartweed (*Polygonum amphibium*), reed canarygrass (*Phalaris arundinacea*), foxtail barley (*Hordeum jubatum*), American sloughgrass (*Beckmannia syzigachne*), common spikerush (*Eleocharis palustris*), and cattail (*Typha latifolia*). The one PFO wetland observed had a mix of willow (*Salix spp.*) and eastern cottonwood (*Populus deltoides*) fringing a PEM wetland.

The hydric soil indicators recorded for this wetland Type were redox dark surface, depleted below dark surface, and thick dark surface. Soils were dark in color (10yr) with low chroma and values. Redox concentrations were most commonly 10yr 5/8. Primary indicators of wetland hydrology observed in the seasonally flooded basins were algal mats and crusts, sediment deposits, salt crusts, saturation, and water

stained leaves. Secondary indicators observed including surface soil cracks, sparsely vegetated concave surface, drainage patterns, geomorphic position, oxidized rhizospheres, and the FAC-neutral test.

Table 3. Wetlands by Type within the project 500-ft Corridor.¹

CLASSIFICATION		WETLANDS OBSERVED			
		Preferred Route		Alternative Route	
Circular 39 ²	Cowardin ³	Number	Area (acres)	Number	Area (acres)
1	PEM	60	18.4	67	22.1
1	PFO	1	0.5	1	0.5
6	PSS	1	0.6	1	0.6
Totals		62	19.5	69	23.2
<ul style="list-style-type: none"> • ¹ Includes only wetland area within the 500-foot pipeline corridor. Actual wetland boundaries may extend past the project limits and may be larger than indicated. Not all the wetlands within the 500 foot corridor will be impacted, see Exhibit F.2. • ² Wetlands of the United States, Circular 39. (Shaw and Fredine, 1956) • ³ Classification of Wetlands and Deepwater Habitats of the United States. (Cowardin et al.1979) 					

Type 6—Palustrine Scrub-Shrub Broad-leaved Deciduous (PSS1B) Shrub-carrs. One Type 6 shrub-swamp community was identified within both the preferred and alternative study corridors, encompassing 0.6 acres. Scrub-Shrubs are plant communities composed of tall, deciduous shrubs growing on saturated to seasonally flooded soils. They are typically dominated by willows or dogwood (*Cornus spp.*) shrub canopy with a ground layer of sedges, grasses and forbs of sedge meadow a communities. The diversity of species composing the ground layer is dependent on degree of shrub canopy cover, degree of disturbance, and water source. The observed Scrub-shrub wetland was dominated by a willow species shrub canopy and reed canarygrass in the understory. The primary indicators of wetland hydrology observed in the Type 6 basin was high water table (frozen water during time of survey).

Wetland Impacts. The proposed Vantage West Spur Lateral Pipeline would be installed using open-cut trenching techniques. Vantage would maintain a 30-foot permanent right-of-way (five feet on one side of the pipeline and 25 feet on the other). Additionally, a 70-foot temporary construction right-of-way would be established adjacent to the permanent right-of-way. The combined right-of-way would be 100 feet wide with the pipeline at the center of the permanent right-of-way. However, neck-down areas will be used around wetlands to avoid or minimize impacts

For the field investigation, a 500-foot corridor was surveyed for wetlands and waterbodies on the preferred and alternative routes (Exhibits F.2 through F.4). The field investigation resulted in the identification and mapping of 62 wetlands and 11 waterbodies present within the preferred 500-foot corridor (69 wetlands and 10 waterbodies alternative route). Fifty-five (55) wetlands and 3 waterbodies would be avoided during construction by routing around the wetland within the 500-ft corridor (60 wetlands and 4 waterbodies avoided on alternative route). Seven (7) wetlands and 8 waterbodies would be within or on the edge of the 30-foot permanent right-of-way (9 wetlands and 6 waterbodies on alternative route). Overall, 1.08 acres of wetlands within the temporary work space will be temporarily impacted on the preferred route, and 1.76 acres on the alternative route. In an effort to avoid and minimize impacts to wetlands, the initial pipeline corridor was revised through several iterations. Pipeline routing identified wetland areas to be excluded from the temporary work areas by necking down the work area width.

Permanent wetland impacts are those that involve permanent dredging of material from, or the placement of permanent fill into waters of the United States. No pump stations or other permanent structures would be constructed in wetlands. There will be no discharges into or filling of wetlands. The proposed project would therefore NOT create any permanent impacts to wetlands.

While the 30-foot permanent right-of-way would be maintained free of trees and shrubs. One PFO wetland was observed within the permanent or construction right-of-way. This is a wetland with a small treed area surrounding a PEM wetland. The permanent right-of-way will not impact the treed area. Tree and shrub removal is not considered to constitute a wetland loss, but does result in permanent wetland type conversion. The clearing of any tree and/or shrub vegetation is considered a secondary wetland impact and would be regulated by the U.S. Army Corps of Engineers. No clearing of this type of vegetation would be necessary, and no permanent wetland type conversion would occur as a result of the proposed project.

All of the wetland and waterbody impacts would be avoided or minimized to the extent practicable. Vantage would implement additional measures to avoid impacts to wetlands by the temporary right of way by either necking down the right-of-way for a short distance in order to avoid identified wetlands, or relocating the construction right-of-way to the opposite side of the permanent right-of-way in order to fully avoid temporary impacts. In addition the perennial waterway may be avoided by boring or horizontal directional drills (HDDs) under the water feature.

B.3. Biological Resources

This section represents biological resource information received during informal discussions with county, state, and federal agencies. The information reflects data sources available at the time this document was prepared. The biological information will be updated throughout the pre-construction process using ongoing surveys and continued informal consultation with agencies. Information was requested from each area for a two mile wide study area centered around the proposed route and again for reroutes, as needed. Field surveys occurred in a 500 ft corridor centered on the proposed pipeline route (preferred and alternative routes).

B.3.1 U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS)

The NRCS administers the Wetland Reserve Program (WRP) and Grassland Reserve Program (GRP) as voluntary programs for landowners to protect, restore, and enhance wetlands and grasslands on their property. Vantage submitted an information request to the Divide and William County NRCS District Conservationists to determine if the two mile wide study area included lands enrolled in NRCS programs. Divide County does not currently have any NRCS easement contracts. Williams County has not responded in regards to conservation programs in their county. Vantage land agents work with landowners along the route to determine if their property is enrolled in NRCS easement programs. As Vantage negotiates easement, they collect NRCS program information from landowners through the use of a questionnaire (Exhibit O).

Both the preferred and alternative pipeline routes cross 0.17 miles of prime farmland. A desktop analysis using the Soil Survey Geographic (SSURGO) database identified prime farmland in the study area. During the routing process, the survey corridor was able to avoid the majority of prime farmland areas; however, 0.17 miles will be crossed. Vantage contacted the NRCS regarding permits needed and

mitigation requirements for crossing prime farmland. The NRCS replied on March 25, 2015 that the pipeline will not convert farmland to non-farmland making the project is exempt from the Farmland Protection Policy Act and no determination is necessary (Exhibit H.1). See Route Permit Section B.4.3.a for additional information on Prime Farmland.

A copy of correspondences with NRCS is in Exhibit H.1.

B.3.2 North Dakota Game and Fish Department (NDGF)

The NDDA was contacted on January 29, 2015 to introduce the Project and request the locations of Wildlife Management Areas (WMA), parcels enrolled in Private Lands Open to Sportsmen (PLOTS), and obtain guidance for wildlife species or habitat of concern.

NDGF did not comment on the location of WMA in relation to the project. However, using public land ownership GIS information during the desktop routing process, it was determined that the project route does not cross any WMAs. However, there is on one WMA parcel within the two mile wide study area. The WMA parcel boundary is approximately one mile east of the survey corridor.

One parcel (0.5 miles) enrolled in the NDFG's Private Lands Open to Sportsmen (PLOTS) state management program will be traversed by both the preferred and alternative the pipeline routes. The PLOTS program is an agreement between NDFG and the landowner allowing public walk-in hunting. The PLOTS Web Map on the NDFG website was used to identify tracts enrolled in the program. However, PLOTS maps change frequently as enrollment can change annually. Currently, the proposed Vantage West Spur Lateral Pipeline route crosses 0.5 miles of PLOTS tracts.

NDGF commented that the National Wetland Inventory (NWI) indicates wetlands are within the study area. NDGF recommended steps be taken to avoid wetlands, protect any wetlands that cannot be avoided, prevent altering drainage patterns, and avoid placement of above-ground appurtenances in wetland areas. Vantage has made efforts to avoid wetlands as much as practicable during routing (see Route Permit Section B.4). Impacts to wetlands will be avoided with construction techniques (horizontal directional drilling) and mitigation efforts set forth in the EPP and SWPPP (Exhibit J).

NDGF's primary concern is the possible disturbance of native prairie associated with construction of the pipeline and access roads. They recommend avoiding disturbance to native prairie as much as possible and reclaiming disturbed areas post-construction to pre-project conditions. During the routing process, Vantage avoided native prairie habitat as much as possible. Only a small percentage of the pipeline route crosses native prairie, 0.82 miles (1.73%) and 1.59 miles (3.23%) for the preferred and alternative routes, respectively. The EPP outlines reclamation process and seed mixes that will be implemented (Exhibit J).

Most importantly, the NDGF does not believe the West Spur Pipeline project will have significant adverse effects on wildlife or wildlife habitat, including species of conservation concern.

A copy of the correspondence with NDGF is in Exhibit H.2.

B.3.3 U.S. Fish and Wildlife Service (USFWS)

The USFWS administers programs designed to identify and protect plant and animal species of special status and their habitats. Vantage has been corresponding with the USFWS since the initiation of the project.

The USFWS Wetland and Grassland Easement programs pay landowners to enter wetlands and grasslands in this permanent protection program. Wetlands protected under a wetland easement are regulated by the USFWS and cannot be drained, filled, graded, or burned. Vantage has been working closely with the USFWS Crosby Wetland Management District to identify wetlands and grasslands under easement. The West Spur Pipeline route crosses 0.41 miles of land (both routes) enrolled in the wetlands easement, and no parcels enrolled in the Grassland Easement program. The USFWS determined that the pipeline is near wetlands on only one of these parcels. Further, USFWS stated that by avoiding impacts to these wetlands within the right-of-way would satisfy USFWS's land interest perspective (Exhibit H.3). In areas where wetland easements have been identified, the temporary construction right-of-way will be narrowed to avoid impact to any wetlands protected by a wetland easement.

Vantage contacted, email, and submitted sample data collection forms to the USFWS North Dakota Ecological Services Field Office (USFWS-ES) in August 2014 (Exhibit H.3). The letters requested information on Threatened and Endangered (T&E) species, their habitats, and USFWS identified critical habitats. During a phone conversation, Kelley Shelley, Field Supervisor of the North Dakota Field Office, directed Vantage to the Information, Planning, and Conservation (IPaC) decision support system to download GIS on T&E species and their habitat. The information from IPaC was used for routing the pipeline to avoid impacts to species or habitats of concern. Field surveys collected data on land use, habitat, and any sensitive species observed. In addition, Vantage conducted a species and habitat assessment to assess and mitigate any impacts to sensitive species and their habitat (Exhibit H.3).

The Endangered Species Act (ESA), administered by the U.S. Fish and Wildlife Service (USFWS), protects and recovers imperiled species and the ecosystems upon which they depend. Six federally listed Threatened and Endangered wildlife species and designated their Critical Habitat are known to occur in Williams and Divide Counties of North Dakota. At this time, there are no federally listed threatened and endangered plant species listed for Divide or Williams Counties, North Dakota. The USFWS also lists one Proposed and one Candidate species in each county (Route Permit Section B.4.1). In addition, the USFWS Dakota Field Office identified the Dakota skipper as a species of concern in the region.

A desktop analysis was investigated the proximity of the West Spur Pipeline study area in relation to USFWS-designated critical habitat (Exhibit G). The USFWS IPaC decision support system results indicated that Dakota skipper (proposed species) critical habitat is forty-five miles southeast of the project, and nearest known piping plover (threatened species) critical habitat is at least seven miles from the project route. IPaC identified a migration corridor in North Dakota where whooping cranes migrate annually in the spring and fall. During migration whooping cranes could stop to use wetlands and river sandbars for roosting during the day and night, and agricultural croplands for feeding. However, no traditional roosting sites for whooping cranes have been identified in North Dakota.

Field surveys in 2014 and 2015 collected land use and sensitive species information to assess the potential for listed species and their habitat to be impacted by the project (Exhibit G). Field surveys identified limited northern long-ear bat tree habitat, and limited native grassland habitat for Sprague's pipit and the

Dakota skipper. Native grasslands are is the preferred habitat for the Dakota skipper and Sprague's pipit. Field surveys identified 0.82 miles of native grassland crossed by the preferred project route (1.59 crossed by the alternative route) that could potentially support these species. However, the habitat quality was low due to introduced species. Only one windbreak of trees suitable for use by the northern long-eared bat would be removed by the project totaling 30 feet width of permanent tree clearing.

No golden or bald eagle nests or birds were documented during the field survey(s) within the two mile project study area. Several raptors were observed during field survey but no raptor nest were located within the project corridor. Additional pre-and post-construction wildlife and habitat surveys will be completed to avoid and minimize impacts on wildlife species and their habitat. A wildlife monitor will be employed during the pipeline construction to identify any potential wildlife or habitat impacts and mitigation.

Potential impacts to wildlife include temporary displacement and loss of habitat due to construction. The pipeline construction and operation is not likely to cause long-term declines in wildlife populations or habitat. Implementation of approved reclamation and habitat restoration prescriptions following construction would result only in temporary loss of native and agricultural habitats form and function, between the time of pipeline construction and successful habitat reclamation.

A copy of the correspondence with the USFWS is in Exhibit H.3.

B.3.4 North Dakota Parks and Recreation Department (NDPR)

The NDPR's scope of authority and expertise covers recreation and biological resources, in particular rare plants and ecological communities. The NDPR Department was contacted in January and February 2015 to introduce the Project and request information on NDPR administered lands within the study area. Information was requested for the location and identification of NDPR administered lands in the study area including State Parks, Land and Conservation Fund lands, and scenic byways. Also requested was information from the NDPR- Natural Heritage Biological Conservation Database with respect to rare plants, animals, or significant ecological communities that may be affected by the project.

NDPR stated that the pipeline project, as defined, does not affect state park lands that they manage or Land and Water Conservation Fund recreation projects that they coordinate. The North Dakota Natural Heritage biological conservation database were reviewed and determined no plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the study area. Based on this review, there are no documented occurrences in the Heritage database within or adjacent to study area. However, the agency expresses that the absence of data may indicate the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. Because of this, the Department recommends that the project be accomplished with minimal impacts and that all efforts be made to ensure that critical habitats not be disturbed in the project area to help secure rare species conservation in North Dakota

Correspondence with the NDPR Department is in Exhibit H.4.

B.3.5 North Dakota Department of Agriculture (NDDA)

The NDDA was contacted on January 28, 2015 to introduce the Project and request the locations of waterbodies / parcels enrolled in the NDDA Waterbank Program and obtain guidance and

recommendations for weed control and prevention. The NDDA replied that they do not have private landowners within Williams or Divide Counties actively enrolled in the State Waterbank Program. The Department recommended that Vantage contact the county weed boards (Section B.4.9) regarding weed management and suggested the use of noxious weed guidelines found in the 2015 North Dakota Weed Control Guide.

Correspondence with the NDDA is included in Exhibit H.5.

B.3.6 North Dakota Department of Health (NDDH)

The NDDH Division of Water Quality administers regulatory programs governing the state's interest in air and water quality. Vantage performed a desktop analysis of waterbodies crossed that are considered "impaired" with respect to Section 303(d) of the federal Clean Water Act and "Class I or IA" waterbodies (defined in North Dakota Administrative Code Section 33-16.02.1-09). These waterbodies are designated protected for special uses such as fisheries, drinking water, and recreation. The desktop analysis was completed using NDDH 2011 dataset. The West Spur survey corridor does not cross any Section 303(d) waterbodies or streams.

The NDDH Nonpoint Source Pollution (Section 319 of the Clean Water Act) program works to protect or restore the chemical, physical, and biological integrity of the waters of the state where waters are threatened or impaired due to nonpoint sources of pollution. Vantage contacted the NDDH via email and phone in January and February 2015 to introduce the project and inquire about Nonpoint Source Pollution watersheds that the project may cross. On March 10, 2015, NDDH responded that there are no Section 319 Nonpoint Source Pollution Watershed projects or Section 303(d) listed waters in the project area (Exhibit H.6).

NDDH manages the Source Water Protection Program that seeks to prevent contamination of public water supplies. The program is part of the Safe Drinking Water Act that requires all states to define and assess the source waters of public water systems. Vantage used the NDDH Source Water Protection Program's online maps to identify wellhead protection areas (WHPAs). The proposed route and survey corridor does not cross any WHPAs. In addition, NDDH confirmed that the project does not cross any major aquifers or wellhead or Sourcewater protection areas.

Water Quality-Construction Stormwater

Vantage will obtain a construction stormwater General Permit NDR10-0000 for authorization to discharge under the North Dakota Pollution Discharge Elimination System (NDPDES). A Stormwater Pollution Prevention (SWPP) Plan has been prepared in accordance with NDPDES permit requirements (Exhibit J.4). The implementation of the SWPP plan will prevent and manage run-off to minimize sediment and waste product discharges. An environmental inspector will monitor the effectiveness of sediment and erosion control measures during construction activities. Additional erosion control measures will be implemented as needed based on monitoring results.

Water Quality-Temporary Dewatering and Hydrostatic Testing

Vantage will apply for NDPDES General Permit NDG07-0000 (Authorization to Discharge under NDPDES) for temporary construction dewatering and hydrostatic testing water discharges. Coverage under NDG07-0000 will be obtained prior to construction. Dewatering is necessary when stormwater collects or groundwater seeps into construction trenches. Hydrostatic testing is required, pursuant to

industry safety standards, for each new pipeline segment to verify the integrity of welds and pipe prior to service. All water discharges will be monitored by the environmental inspector, and water quality samples will be collected, analyzed, and reported as required by the General Permit.

Water Quality Certification

The project is not anticipated to permanently impact waters of the U.S. and waters of the state. A wetland and waterbodies report was sent to the USACE for their review and determination (Exhibit F). If warranted, pursuant to the Clean Water Act, Section 401, Vantage will obtain a Water Quality Certification (WQC) from the NDDH.

Air Quality

The NDDH administers the state's air quality protection program under Administrative Code Section 33-15-14. The program does not require air quality permitting for a gas pipeline. However, compressor stations associated with the pipeline may require a permit prior to construction. If warranted, Vantage will apply for the required permits for construction and operation of stationary emission sources.

Correspondences with NDDH are in Exhibit H.6. Vantage will provide NDDH permits required for construction activities to the PSC in supplemental filings.

B.3.7 North Dakota Department of Trust Lands (NDDTL)

The NDDTL manages educational trust funds, assets, and mineral acres. The State of North Dakota has over 3 million acres of land that is managed for the purpose of funding public education in the State to perpetuity. The Trust Lands typically are Sections 16 and 36 in every North Dakota township.

The NDDTL was contacted on January 27, 2015 to introduce the project and verify that the survey corridor does not cross Trust Lands. The NDDTL noted that the project right-of-way will not be involved directly with School Trust land. If future reroutes occur and School Trust land needs to be accessed for this project, Vantage will need to submit an online application on their web site.

In March 2015, the pipeline was rerouted. The preferred route crosses a half section of NDDTL, and the alternative route crosses a full section of NDDTL. Vantage applied for and was issued a survey permit (ROW#6210). Vantage representatives has also applied for a right-of-way permit (ROW #7497), and has scheduled a site visit with NDDTL and Vantage representative including the land survey crew.

Correspondence with the NDDTL is included in Exhibit H.7.

B.3.8 North Dakota State Water Commission (NDSWC)

The NDSWC manages North Dakota's water resources including state sovereign lands (i.e., navigable waters) and water appropriations. A desktop analysis has not identified any NDSWC within the project's survey corridor or a two mile wide study area. The NDSWC confirmed, via a phone call on February 23, 2015, that no state sovereign lands or water appropriations are near the project.

Additional information gathered through the NDSWC and county government websites indicated that floodplains are unmapped in Divide and Williams counties but the County Floodplain Administrators can provide floodplain information if needed. Secondly, North Dakota has no sole-source aquifers. Finally,

the NDSWC maintains monitoring water wells throughout the state and to contact the Water Appropriations Division of NDSWC if water wells may be affected by the project.

Correspondence with NDSWC is in Exhibit H.8.

B.3.9 U.S. Department of Agriculture, North Dakota Farm Service Agency (FSA)

The U.S. Department of Agriculture, Farm Service Agency (FSA) administers the Conservation Reserve Program (CRP) and Conservation Reserve Enhancement Program (CREP). These voluntary programs provide compensation to landowners for placing tillable lands into conservation programs.

The FSA in each county and the state office was contacted by phone and email in January and February 2015. The FSA responded on March 26, 2015 stating that the request for information on the location of their conservation programs was denied (Exhibit H.9).

Vantage actively engages with landowners along the pipeline route to determine their involvement in FSA programs. Vantage provides a questionnaire to landowners to gather information on CRP and other FSA programs (Exhibit O). If a landowner is enrolled in CRP, they are asked to complete the CRP form (Exhibit O) which is ultimately sent to the Farm Service Agency.

B.3.10 U.S. Department of Interior, Bureau of Land Management (BLM)

Based on a desktop review of landownership maps and the BLM Mater Title Plats, no BLM-managed land is located within the project's two mile wide study area. The BLM was contacted on January 9, 2015 to introduce the pipeline project. The BLM confirmed that no BLM-managed land or any special management areas are crossed by the project route.

Correspondence with the BLM is included as Exhibit H.10.

B.3.11 U.S. Department of Interior, Bureau of Reclamation (BOR)

The BOR was contacted on January 27, 2015 to introduce the Project. Based on desktop analysis BOR lands or water projects were not within the pipeline study area. However, the BOR was asked for confirmation on the absence of BOR lands or water supply projects. The BOR reviewed the map provided and determined that Reclamation's only facility near the study area, the Trenton Indian Service Area facilities, are clear of the proposed pipeline.

Correspondence with the BOR is included as Exhibit H.11.

B.3.12 North Dakota County Water Resource Boards

The county Water Resource Boards (WRB) manages county-level drainage issues. The Williams and Divide County WRBs were initially contacted in January 2015 and follow-up phone conversations in February 2015.

The Williams County WRB Chair indicated via phone conversation on February 23, 2015 that there are no requirements or permits needed from their office for pipeline construction. Pipeline construction will be required to maintain a specific distance from a constructed ditch in Williams County. However, the WRB chairperson indicated that there are no drains or ditches near the project area. Their only regulated

ditch is one mile west of Tioga, North Dakota which is outside the study area. To date, Divide County WRB did not respond to the phone or mail contact attempts.

Exhibit H.12 includes correspondence sent to the Williams and Divide County WRBs.

B.3.13 North Dakota County Weed Control Boards

Each county in North Dakota has a County Weed Control Board (WCB), which develops and maintains county-level lists of noxious weeds and implements noxious weed control. The Divide County and Williams County Weed Boards were contacted in January 28, 2015. The consultation letter requested each county confirm their listed noxious weeds, the locations of known noxious weed infestations within the pipeline study area, and provide guidance and/or recommendations for weed control and prevention in their county.

The Williams County WCB confirmed via phone conversation that they use the state listed noxious weed list with no additional species added at the county level. The Williams County Weed Board Officer indicated that their office is closed until May 1, 2015 and he would be able to reference the project maps after that date.

The Divide County WCB was contacted via phone conversation and hard copy letter and maps were mailed on January 28, 2015. He confirmed on the phone the state noxious weed list is used in the county. No other information was received.

Exhibit H.13 includes any written correspondence from the Williams and Divide County WCBs.

B.3.14 U.S. National Park Service (NPS)

Based on a desktop review of landownership maps, no NPS-managed land, trails, or National River Inventory (NRI) river segments are located within the study area. The Midwest Region of the NPS was contacted on January 27, 2015 to introduce the pipeline project. The NPS confirmed that no NPS-managed land, trails, or NRI river segments are crossed by the Vantage West Spur Lateral Pipeline project route. The Fort Union Trading Post National Historic Site is the nearest NPS property to this project and is located over 20 miles southwest of the pipeline project and is not expected to be directly impacted. The NPS commented that should pipeline construction reduce the quantity and/or duration of gas flaring in the area, positive impacts to the night sky environment are possible from the project.

Correspondence with the NPS is included as Exhibit H.14.

B.4. Other Agency Consultations

B.4.1 U.S. Department of Defense

The U.S. Department of Defense, U.S. Air Force (USAF) Cable Affairs office was contacted on January 28, 2015 and again on March 27, 2015 to determine if the West Spur Lateral Pipeline route would be within 1200 feet of the geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility, or within 30 feet on either side of a direct line between an ICBM or launch control facility. The USAF Cable Affairs office confirmed that the Air Force has no assets in the vicinity of the proposed pipeline. Therefore, the West Spur route does not pose any concerns with the ICBM or launch control facility.

Exhibit H.15 includes correspondence from the USAF Cable Affairs office.

SECTION C. NEED FOR FACILITY

C.1. An analysis of the need for the proposed facility based on present and projected demand for the product transmitted by the facility, including the most recent system studies supporting the analysis of the need.

This section provides an overview of the ethane supply and demand in Alberta, as well as a description of the ethane available in North Dakota for transportation by the Vantage West Spur Lateral Pipeline.

C.1.1 Planned Use and Purpose

Oil production in the Bakken field reached 1.2 million barrels per day (bpd) in January 2015. An estimated 1.5 billion cubic feet of natural gas was produced with this oil. Despite low oil prices in early 2015, production is expected to increase in the Bakken. The West Spur project would help transport ethane from a natural gas plant in Williston, ND to an existing line to processing facilities in Alberta.

Historically, natural gas was flared in the Bakken largely due to a lack of infrastructure to harness and transport the gas. The North Dakota Industrial Commission passed flaring goals in July of 2014. This requires operators to capture 77 percent of the natural gas produced as of January 2015, 85 percent by January 2016, and 90 percent by October 2020 or reduce overall production.

C.1.2 Alberta Ethane Supply

The production of ethane in Alberta is directly related to natural gas production and exports from the province. Traditionally, the majority of the ethane has been recovered by through gas processing in Alberta which processes natural gas exports. All economically available ethane in Alberta is being recovered from the existing gas supply.

Gas-directed drilling has declined in Alberta and throughout western Canada in recent years, largely as a result of low prices and high costs. The development of unconventional gas resources in North America has also been a significant contributing factor to the decline in gas-directed drilling in western Canada. As a result, exports of natural gas from Alberta and western Canada have declined. Ongoing decline of the gas supply coupled with an increase in Alberta demand is expected to further reduce gas exports.

As natural gas supply and exports from Alberta have dropped, ethane supply within Alberta has also fallen. A shortfall exists between the Alberta petrochemical demand and what the western Canadian ethane market can supply. While additional ethane supply is potentially available in Alberta, significant new investments in gas processing and natural gas liquids (NGL) infrastructure would be required. In spite of available incentives, no large incremental ethane supply projects have been developed to address the supply shortfall. This is a strong indication that the costs associated with recovering incremental ethane supply in Alberta are so high that they are currently uneconomic to produce. Therefore, the shortfall in Alberta is expected to grow and continue for the foreseeable future.

C.1.3 Alberta Ethane Demand

Petrochemical consumption in Alberta is the primary driver of ethane demand in Western Canada. Virtually all of the ethane produced in Western Canada is consumed by the Alberta petrochemical industry. There are two large ethylene production complexes, one operated by Dow Chemical Canada

LLC (Dow) in Fort Saskatchewan, and the other operated by NOVA in Joffre. There was a significant increase in ethane demand with the expansion of the Dow facility in 1999 and the NOVA facility in 2000.

Ethane demand in Canada is expected to reach a new high in 2015 of 325,000 bpd as conventional production of ethane in Western Canada declines. This produces a deficit of approximately 75,000 bpd of ethane to Canadian processing facilities. Imports from the Marcellus shale and Bakken formations in the U.S. are expected to supply the deficit ethane over the next 20 years.

C.1.4 North Dakota Ethane Supply

The Williston Basin, which covers parts of western North Dakota, eastern Montana, and parts of Saskatchewan and Manitoba, is primarily an oil play that is estimated to contain several hundred billion barrels of oil. Of the estimated oil in place, approximately 4 billion barrels of oil are considered recoverable with existing technology.

The Williston Basin has seen rapid production increases in recent years due largely to high oil prices and technological improvements, such as horizontal drilling and multistage fracturing. The Bakken geological formation has been the most significant target of Williston Basin exploration activity, although producers are now also looking at the Three Forks formation for production. Associated gas production has increased coincident with the oil production, and this associated gas has high ethane content (typically in excess of 20 percent ethane). Virtually all of the ethane produced with natural gas is currently left in the gas stream.

In 2007, oil production in North Dakota was less than 200,000 bpd, compared to the 1.2 million bpd in 2015. North Dakota natural gas production followed a similar trend with less than 200 million cubic feet per day (mmcf/d) in 2007 to over 1,500 mmcf/d in 2015. The recovery and sale of specification ethane provides an additional source of revenue to Bakken producers. For example, the Vantage Pipeline supplied 11,507 mmcf ethane to Alberta from June 2014 to October 2014. The Vantage West Spur Pipeline expansion will increase the Vantage mainline capacity from 40,000 bpd to approximately 66,000 bpd.

The West Spur Lateral of the Vantage Pipeline system would transport ethane produced from other western North Dakota-area natural gas producers. ONEOK Partners began operating its \$135-150 million, 100 (MMcf/d) Stateline II natural gas processing facility in western Williams County, North Dakota in April 2013. The Stateline II Plant is the third new natural gas processing facility that ONEOK Partners has completed in the Williston Basin since late 2011. Together the Stateline II, Stateline I, and Garden Creek plants are processing natural gas and increased its processing capacity in the region to 390 MMcf/d from 90 MMcf/d in 2011. The Stateline II Plant and its associate infrastructure will reduce the flaring of natural gas in the region, enable producers to deliver natural gas to customers, and enable the sale of ethane to markets in Alberta.

C.1.5 Future Expansion

The addition of three pump stations in Canada would provide the ability to further compress the ethane and expand the Vantage Pipeline capacity to approximately 70,000 bpd.

C.2. A description of any feasible alternative methods of serving the need For the proposed facility

No other pipelines currently connect the Stateline II Gas Processing Plant to its ethane export market in Alberta, Canada. The marketable ethane available at this plant will likely be flared until suitable infrastructure connects this plant to the existing Vantage Pipeline.

C.2.1 Vantage West Spur Lateral Pipeline Project

The Vantage West Spur Lateral Pipeline Project is a new 47.3 mile long (49.1 mile alternative route) 8-inch diameter pipeline to transport ethane from a processing plant near Williston, ND to the existing Vantage Pipeline near Stady, ND. This project will supply additional ethane to meet the ethane demand of processing facilities in Canada.

C.2.2 No Action Alternative

As production of oil increases in the Bakken, there is a movement to restrict flaring of natural gas. In 2011, only 64 percent of the natural gas produced in the Bakken made it to market. The gas capture goals set by the North Dakota Industrial Commission in July 2014 require producers to harness the majority of the natural gas produced or reduce production. As legislature and regulatory agencies require gas capture, infrastructure to transport natural gas such as ethane will be absolutely necessary. Thus, a no action alternative is ill-advised.

C.2.3 Trucking Alternative

Ethane is commonly shipped in pipelines and not often shipped via truck or rail. Ethane is federally regulated as a hazardous material and requires specialized shipping containers. The vapor pressure of ethane exceeds the 600 psi limit of most high pressure tanks at approximately 62 °F. Therefore, shipping containers would need to be pressurized or refrigerated to transport ethane.

C.2.4 Rail Alternative

Ethane is commonly shipped in pipelines and not often shipped via truck or rail. Ethane is federally regulated as a hazardous material and requires specialized shipping containers. The vapor pressure of ethane exceeds the 600 psi limit of most high pressure tanks at approximately 62 °F. Therefore, shipping containers would need to be pressurized or refrigerated to transport ethane.

C.2.5 Conclusions with respect to the alternative

The excess supply of ethane in the Bakken and the demand for ethane in the Canadian petrochemical industry demonstrate the need for this Project. An analysis of the alternatives reveal the Vantage West Spur Lateral Pipeline is the best way to transport ethane from the Stateline II natural gas processing facility in western Williams County, North Dakota to petrochemical markets in Canada. This project would join an existing pipeline near Stady, North Dakota to transport ethane the remainder of the distance to Canadian processing facilities. The Project is needed for production companies to meet new flaring standards, thus a "no action" alternative is not acceptable. The volatile nature of ethane restricts its transport by truck and rail, particularly across international borders. Thus, the Vantage West Spur Lateral Pipeline is the safest and most economical option for transporting ethane from the Stateline II natural gas processing facility.

SECTION D. LOCATION

D.1. Study area

In accordance with North Dakota Administrative Code (NDAC) § 69-06-08-02, the proposed route was selected after completing the route suitability evaluation process. The route alignment was selected after identifying exclusion areas and avoidance areas, and considering the selection and policy criteria discussed below. The pipeline initial study area consisted of possible route locations within a ten mile wide area in Williams and Divide County of North Dakota, between ONEOK's natural gas plant outside of Williston, ND and the existing Vantage Pipeline. Vantage compiled and reviewed data for land ownership, land cover type, soils, surface water, wetlands, and other criteria within the study area, as a basis for developing route. The criteria used to evaluate the proposed route are described in Sections B of the Route Permit portion of this simultaneously submitted application.

Using the exclusion, avoidance and selection criteria, the route was narrowed to a two mile wide study area for more detailed routing and agency informal consultation. Vantage initially defined its study area as the general area centered on the proposed pipeline route within Williams and Divide Counties. As the routing criteria was further analyzed, a 500 foot wide survey corridor(s) was field surveyed and used for selecting the proposed route centerline (Exhibit C). Surveys for biological and cultural resources were conducted within this 500 foot survey corridor, as discussed in Section B of the Route Permit application.

D.2. Map of Proposed Corridor

Maps showing the location of exclusion and avoidance areas as defined in Section B.4 of the Route Permit Application are attached as Exhibit I. Additional detailed maps of cultural resource and wetland avoidance areas are provided as appendices to Exhibits E and F, respectively. Several potential alignments have been assessed and a final alignment was selected within the identified corridor.

D.3. Relative Value of Evaluation Criteria

This is an Application for a Corridor Certificate and is submitted simultaneously with an Application for a Route Permit. These elements are discussed in Section B.3 and B.4 of the Route Permit portion of this Application.

D.4. Criteria to be Evaluated

This is an Application for a Corridor Certificate and is submitted simultaneously with an Application for a Route Permit. These elements are discussed in Section B.3 and B.4 of the Route Permit portion of this Application.

D.5. General Mitigative Measures to be Taken

This is an Application for a Corridor Certificate and is submitted simultaneously with an Application for a Route Permit. These elements are discussed in Section B.6 of the Route Permit portion of this Application and in the EPP (Exhibit J).

D.6. Qualifications of Persons Contributing to the Study

Qualifications of contributors to the pipeline site location study are provided below:

Ethnoscience Inc. (Cultural Resources)

Lynelle A. Peterson, M.A., – Lynelle Peterson is the president/owner and senior archaeologist of Ethnoscience. She has over 29 years of experience as a supervisor for cultural resource investigations. Her expertise is Northern Plains prehistory, historic archaeology (1820-1880), and stone ring archaeology. She also has experience in both historic and prehistoric archaeology, and has worked in the Northern Plains, Great Basin, and Northern Plateau cultural areas. She worked six years with the National Park Service, spending three years examining Fort Union in northwest North Dakota. From 1989-1991, she worked for the University of North Dakota where she conducted numerous projects in the state. In 1991, Ms. Peterson joined Ethnoscience, Inc. and bought the company in 2003. Ms. Peterson has supervised hundreds of survey, testing, and mitigation projects. In addition to cultural resource inventories, testing, and mitigation, she has participated in the development of Cultural Resource Overviews, Environmental Impact Statements, Cultural Impact Assessments, Management Plans, as well as drafting Memoranda of Agreement (MOAs), MOUs, and Programmatic MOAs. Ms. Peterson was adopted into the Flint Knife clan of the Hidatsa in 2006.

KC Harvey Environmental LLC (Wetlands, Wildlife, Soils, Vegetation)

David P. Cameron, Principal Engineer – Mr. Cameron has practiced as a professional engineer in four states and is a specialist in reclamation design, water management, and NEPA EA/EIS with 33 years of professional experience in North America, Mexico, South America, and Australasia. David has a B.S. degree in Civil Engineering with an emphasis on geotechnical engineering from the University of Colorado. He also has vast experience in NEPA permitting and implementation of reclamation plans for mining, oil and gas, and other energy related projects. Mr. Cameron was the principle in charge for KC Harvey for the Vantage Pipeline Project and the Vantage West Spur Lateral Project and provided technical review and coordination of staff completing the environmental field surveys, environmental reporting and permitting.

Monica Pokorny, Senior Ecologist – Ms. Pokorny has over 19 years of experience as a professional biologist in the private and public sectors. Monica Pokorny earned a BA in Biology with emphasis in Botany and minor in Wildlife Biology from the University of Montana. She received her MS from Montana State University in Land Resources and Environmental Sciences. Her work experience is broad and includes ecological restoration, invasive plant management, wetland restoration, botany, wildlife habitat analysis, permitting, NEPA, and biological studies for transportation, pipeline and electric transmission projects. Ms. Pokorny was the project manager for KC Harvey for the Vantage West Spur Project. She coordinated for staff completing the environmental field surveys and environmental reporting for wetland, vegetation, soils, water resources, wildlife and threatened and endangered species. She also coordinated development of the permit applications and agency consultations.

Elizabeth Zizzamia, Senior GIS Analyst – Since 2000, Elizabeth has worked in the field of Geographic Information Systems (GIS) on diverse spatial projects. Elizabeth's GIS expertise is centered on cartography, relational database management, vector and raster spatial analysis, and GPS field data collection. Elizabeth received her B.S. in Earth System Sciences from George Mason University. She earned her M.S. in Earth Sciences with an emphasis in structural geology in 2008 at Montana State University. Elizabeth has served as the lead GIS analyst and database

manager during the route planning and permitting phases for the Vantage Pipeline Project and the Vantage West Spur Lateral Project.

D.7. Maps

D.7.1 Map the criteria within the study area showing the proposed corridor.

Generalized location maps of the route are attached as Exhibit D. Maps showing the location of exclusion and avoidance areas as defined in Section B.4 of the Route Permit Application are attached as Exhibit I.

D.7.2 Map and GIS Requirements

In accordance with NDAC Section 69-06-04.01(2)(n), Vantage is filing, under a separate cover, a CD which contains the GIS data required by ND-PSC for its proposed West Spur Lateral route, as described in this Application. This CD contains GIS data for several features including the proposed centerline, survey corridor, and proposed workspace areas. All files will be submitted in ESRI shapefile format defined in the North Dakota State Plane NAD 83 coordinate system.