

**ND PSC Case No. PU-10-554**

**6-Inch Natural Gas Liquids Pipeline  
Certificate of Corridor Compatibility Application**

**July 2011**



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## **INTRODUCTION**

Hiland Operating, LLC (Hiland Operating), submits this Certificate of Corridor Compatibility Application to the North Dakota Public Service Commission (Commission) for an approximately 14.1 mile-long, 6-inch natural gas liquids (NGLs) pipeline project to be located in McKenzie County, North Dakota (the Project). The Project will be located approximately nine miles northeast of Cartwright, North Dakota and will transport NGLs from the Hiland Operating Watford City natural gas processing plant (Hiland Operating Plant) to a rail loading facility. Hiland Operating's rail loading facility (Hiland Operating Rail Terminal) is located next to the Yellowstone Valley Railroad (YSVR) line. The Project's eastern 5.1 miles of corridor encompass the corridor designated by the Commission in December 2010 in connection with the siting of Hiland Operating's 8-inch natural gas pipeline project (see Findings of Fact, Conclusions of Law and Order, dated December 30, 2010, Corridor Compatibility Number 116 and Route Permit Number 126 issued in Case No. PU-10-555).

In accordance with Chapter 49-22 of the North Dakota Century Code, Section 69-06-08-02 of the North Dakota Administrative Code, and the Commission's Energy Conversion and Transmission Facility Siting Guidelines, Hiland Operating provides the following information to support its request for a Certificate of Corridor Compatibility for the Project.

## **SECTION A            DESCRIPTION OF PROPOSED FACILITY**

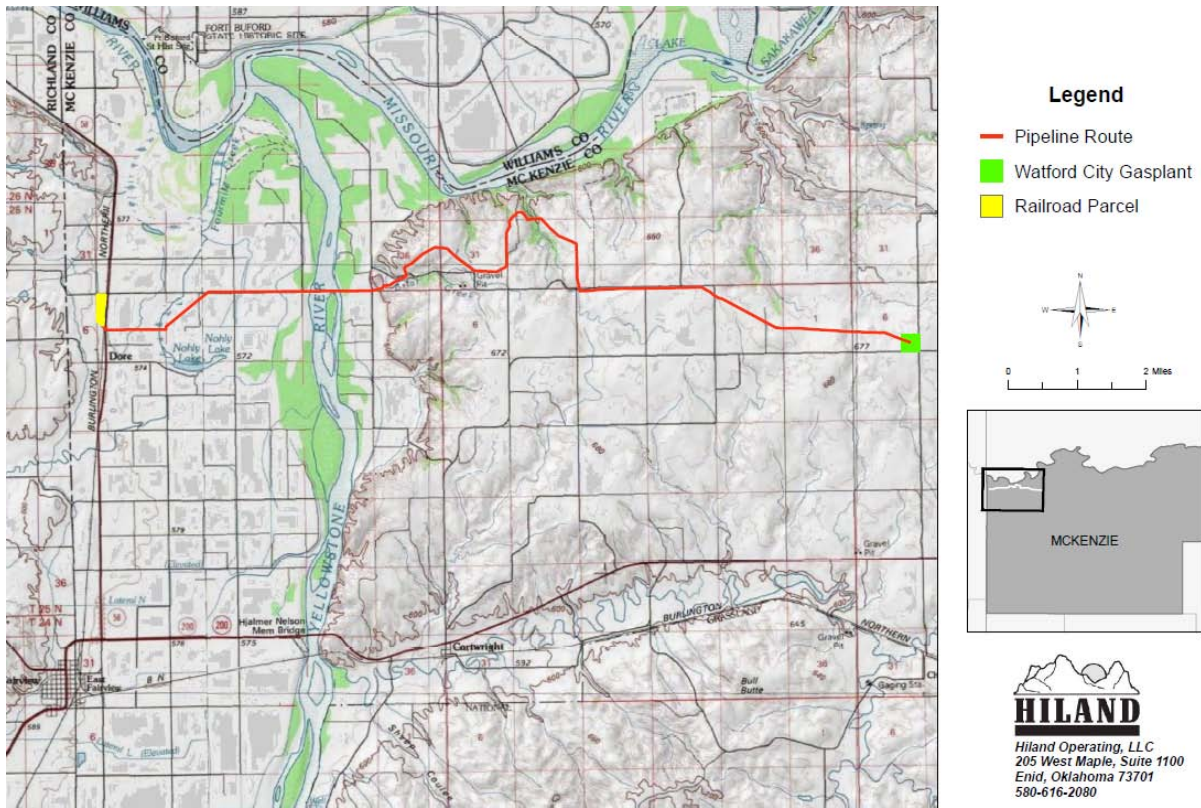
### **A.1    DESCRIBE THE TYPE OF TRANSMISSION FACILITY ADDRESSED IN THIS APPLICATION. THE DESCRIPTION SHALL INCLUDE THE PURPOSE OF THE FACILITY AND THE TECHNOLOGY TO BE EMPLOYED**

The Project will consist of an underground pipeline that will transport NGLs. The line will utilize 6-inch steel pipe. The 14.1-mile pipeline will originate at the Hiland Operating Plant 7 miles northeast of Cartwright, North Dakota, and will terminate at the Hiland Operating Rail Terminal, approximately 5 miles north and 8 miles west of Cartwright, North Dakota. The Project will be located completely within McKenzie County, North Dakota. Figure 1.A.1 shows the general location of the Project.

Surface facilities installed will be limited to pipeline markers, rectifiers, a "pig" launcher/receiver and block valves. Some small fenced-in enclosures to house associated power and control systems may be installed to allow valves to be operated remotely.

Upon completion, the Project will enable transportation of NGLs produced in northwestern North Dakota to the various delivery areas served by YSVR. The Project will provide capacity to transport increased production of processed natural gas liquids from the Bakken and Three Forks formations.

The estimated cost of the Project is \$4 million.



**FIGURE 1.A.1 – General Project Location Map**

**A.2 DESCRIBE THE TYPE, SOURCE AND FINAL DESTINATION OF THE PRODUCT TO BE TRANSMITTED BY THE PROPOSED FACILITY**

Hiland Operating completed earlier this year and is currently operating the Hiland Operating Plant, which has a 60 million standard cubic feet per day capacity to purify and fractionate raw natural gas produced from oil fields in western North Dakota. The plant will deliver pipeline-quality natural gas as well as NGLs produced during fractionation for use as a heating fuel by residential, commercial and industrial consumers. The proposed Project will enable transportation of NGLs (i.e., propanes, mixed butanes and natural gasolines) via pipeline from the Hiland Operating Plant to the Hiland Operating Rail Terminal, with further transportation service provided by the YSVR.

**A.3 PROVIDE A DESCRIPTION OF THE SIZE AND DESIGN OF THE PIPEINE FACILITY**

**A.3 (a) Width of the Right of Way**

The Project right-of-way (ROW) will generally be 125 feet wide to allow adequate room for topsoil separation, work equipment and pipe stringing. This ROW will consist of both a permanent easement and temporary workspace, which will be utilized only during construction and includes material staging areas and temporary access roads. The ROW will be wide enough to provide areas for prefabrication of a section of pipeline and storage of topsoil/subsoil material. To support construction activities, Hiland Operating will temporarily use property at the Hiland Operating Plant as a contractor staging and pipe storage area. Hiland Operating will use existing public roads to access the ROW, and does not expect to modify roads or construct new permanent access roads.

Hiland Operating has acquired or will acquire a 100-foot permanent easement for the Project, as well as for possible future liquid pipeline(s) installation. The permanent easement width was selected based on the following criteria:

- Provision of adequate space and line separation for future line maintenance; and
- Allowance of adequate space to facilitate construction of additional lines, while minimizing potential damage to the existing line(s), if additional lines are installed in the future.

A.3 (b) Estimated Distances Between Surface Structures

The Project's pipeline will be buried underground. Unlike power transmission lines with towers, only a few surface structures are associated with an underground pipeline system. In this case, the product pumps will be located at the Hiland Operating Plant, along with an associated pipeline "pig" launcher, block valves and pressure and flow controllers. A "pig" trap and isolation valves will be installed at each of the Project's points of interconnection.

With the exception of pipeline markers, main line valve settings, and rectifiers and test stations associated with the cathodic protection system, no surface structures will be installed between the start and the end of the pipeline.

Estimated distances between surface structures along the route is 4 miles.

A.3 (c) Pipe Size

The proposed Project will involve installation of 6-inch nominal diameter pipe with a nominal wall thickness of 0.188 inches denoted as American Petroleum Institute (API) Code 5LX specification X52/X42 pipeline pipe.

The valves to be installed will be 6-inch ANSI 300, flange end by flange end, full port, rising stem slab gate valves. These valves will be manufactured in accordance with API Standard 6D "API Specification for Steel, Gate, Plug, Ball and Check Valves for Pipeline Service". The MAOP of the valves will be 740 psig.

A.3 (d) Approximate Length of Facility

The Project requires the installation of approximately 14.1 miles of pipe of which 9.0 miles of the western portion will be installed in an entirely new pipeline corridor. The eastern 5.1 miles will be installed in a corridor which encompasses the 200-foot wide corridor designated in connection with Hiland Operating's 8-inch natural gas pipeline project (see Case No. PU-10-555).

A.3 (e) Maximum Design Operating Pressure and Temperature

The Maximum Allowable Operating Pressure (MAOP) of the pipe will be 740 psig. The maximum temperature of the gas will be 120°F which is within pipe mechanical design parameters. However, the Project will typically operate between 60°F to 120°F.

A.3 (f) Maximum Design Flow Rate

The pipeline will have a maximum capacity of 600 gallons per minute or 864,000 gallons per day.

A.3 (g) The Number and General Location of Compressor or Pumping Stations

The only product pumps associated with the Project will be installed at the Hiland Operating Plant, located on the east end of the Project.

**A.4 TIME SCHEDULE**

Hiland Operating proposes to develop the proposed Project on the following time schedule:

A.4 (a) Certificate of Corridor Compatibility

The Certificate of Corridor Compatibility Application is being submitted in July 2011 as part of this consolidated Certificate of Corridor Compatibility and Route Permit Application.

A.4 (b) Route Application

The Route Permit Application is being submitted in July 2011 as part of this consolidated Certificate of Corridor Compatibility and Route Permit Application.

A.4 (c) ROW Acquisition Date

Hiland Operating plans to have ROW acquisition completed by August 1, 2011.

A.4 (d) Issuance of Certificate of Corridor Compatibility and Route Permit

A Certificate of Corridor Compatibility and a Route Permit for the proposed Project are expected to be issued on or before August 31, 2011.

A.4 (e) Construction Start Date

Hiland Operating plans to begin construction of the Project as soon as possible. Construction in the third quarter 2011 would allow the proposed Project to be operational in the fourth quarter of 2011.

A.4 (f) Construction Complete

The estimated Project construction completion date is on or before October 31, 2011.

A.4 (g) Test Operations

The estimated test operations date is on or before November 7, 2011.

A.4 (h) In-Service Date

The estimated in-service date for the Project is on or before November 15, 2011.

## **SECTION B            STUDIES**

Section 69-06-04-02(1)(b) of the North Dakota Administrative Code, requires that a corridor's width be at least ten percent of the length of the proposed Project, but not less than one mile or greater than six miles wide unless approved by the Commission. A mile wide field study corridor was selected because 5.1 miles of the Project will be installed within a previously designated corridor, and 9.0 miles of the Project will be installed in a new corridor. However record searches and database reviews were performed for 2-mile wide or greater study corridors.

Studies were undertaken to evaluate the proposed Project's potential impacts to recreational, environmental and cultural resources. Specific study findings for the proposed corridor are discussed in detail in the Route Application (see Tab 3) and associated exhibits (see Tab 4). Significant features are depicted in Tab 4 on Figures 4.A.1a to 4.A.5a which are overlaid on an aerial photograph taken in 2010. The route is also presented superimposed on a USGS Topographic map as Figures 4.A.1b to Figure 4.A.5b also located in Tab 4. This information is also presented as shapefiles on the enclosed CD-ROM disk in Tab 7 suitable for viewing with ESRI's ArcGIS mapping software.

Hiland Operating engaged Keitu Engineers & Consultants, Inc. and Beaver Creek Archaeology, Inc. to perform the cultural resource siting studies for the proposed Project.

Beaver Creek Archaeology, Inc. performed an archeological file search in August 2010 using a 2-mile wide study corridor on a total of 19.5 miles of proposed route for up to three separate pipelines; with two alternative routes to reach the rail loading facility. The August 2010 file search is supplemented with an additional file search in May 2011 again with a 2-mile wide study corridor using a slightly modified route which incorporates final changes prompted by landowner concerns. A 250-foot wide field survey was completed in September 2010 for the entire 5.1 miles of the eastern portion of the Project. A 250-foot wide field survey, twice the proposed construction ROW width, was performed in June 2011 of the incremental 9.0 miles of the Project.

Keitu Engineers & Consultants, Inc. conducted a database search using a 2-mile wide study corridor for all remaining items outlined as either exclusion or avoidance areas in the North Dakota Administrative Code along the final proposed route in March 2011. Items reviewed included Federal and state parks, protected and sensitive plant and animals as well as civil and social structures such as recreational areas and rural homes and farmsteads. In August and September of 2010 a field study using a minimum 1-mile wide study corridor was performed on the initial east 5.1 miles portion of the route as well as the majority of both alternatives to the rail loading facility. In May 2011, a field study was completed on the incremental western 9.0 miles of the final route using a 1-mile wide corridor (i.e., ½-mile on either side of the expected Project route).

**SECTION C                    NEED FOR FACILITY**

**C.1    DESCRIBE THE NEED FOR THE FACILITY BASED ON CURRENT AND PROJECTED DEMAND FOR THE PRODUCT TRANSMITTED BY THE FACILITY, INCLUDING THE MOST RECENT SYSTEM STUDIES SUPPORTING THE ANALYSIS OF THE NEED**

C.1 (a)    Planned Use and Purpose

Raw natural gas produced at the well sites contains varying levels of sulfur compounds and other contaminants (including water) as well as varying heat content. This raw gas must either be flared or processed to meet standardized specifications prior to sale.

The Hiland Operating Plant produces pipeline grade natural gas and mixed NGLs. The NGLs will be propane, butanes and mixed natural gasolines. The proposed Project will connect the plant to sale points via the Hiland Operating Rail Terminal adjacent to the YSVR.

C.1 (b)    Statement Concerning Deviations from Most Recent 10-year Plan

Hiland Operating's Ten-Year Plan for 2011-2021 was filed with the Commission on July 1, 2011. The proposed Project is consistent with that plan.

C.1 (c)    Recent System Studies Supporting the Analysis of the Need

A copy of "An Update on North Dakota's Natural Gas Infrastructure" Report prepared by North Dakota Pipeline Authority Director Justin Kringstad is presented in Tab 2 as Appendix 2.A. According to the report, as of July 1, 2010, over 17% of producing wells in the state do not recover the natural gas produced for sale.

According to the North Dakota Industrial Commission records, North Dakota pumped a record 113 million barrels of oil in 2010, shattering the high set a year earlier by 33 million barrels.<sup>1</sup> The state also produced a record 113 billion cubic feet of natural gas in 2010, up from 92.4 billion cubic feet the year before.<sup>2</sup> At the end of April 2011, per the latest North Dakota Industrial Commission statistics, 35% of natural gas produced in North Dakota was flared as an unmarketable byproduct of oil production.<sup>2</sup> With over 170 drilling rigs currently in operation and approximately 110 new wells being completed each month, the state's natural gas production is expected to continue to climb and more processing and associated transportation capacity is necessary.

Pipeline transfer to the rail loading facility will (1) eliminate up to 20 roundtrip truck trips per day to distant terminals, and (2) provide access to more efficient transportation and higher margin markets for the NGLs.

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<sup>1</sup> NDIC. "North Dakota Annual Oil Production." Available at: <https://www.dmr.nd.gov/oilgas/stats/annualprod.pdf> (accessed June 30, 2011).

<sup>2</sup> NDIC. "North Dakota Monthly Gas Production and Sales." Available at: <https://www.dmr.nd.gov/oilgas/stats/Gas1990ToPresent.pdf> (accessed June 30, 2011).

## **C.2 ALTERNATIVES TO THE PROPOSED FACILITY**

Three alternatives to the proposed Project were considered.

### **C.2 (a) Alternative Destination – Routing to Burlington Northern Railway**

Burlington Northern Railway provides rail service along a branch located approximately 15 miles north of the Hiland Operating Plant, and north of the Missouri River. The line is located just north of ND Highway 1804.

This option was eliminated for four reasons: (1) the YSVR offered better service for the intended shipments, including daily verses twice weekly car switches; (2) the siding for the Burlington Northern Railway was located slightly farther from the product origin; (3) access to a siding along the Burlington Northern Railway would have required crossing the Missouri River, which has more significant permitting issues associated with it than the Yellowstone River; and (4) two major archeological sites exist along the most desirable route, which would have necessitated a major deviation and additional construction costs in order to avoid these areas.

### **C.2 (b) “Do Nothing“ Alternative – Continue Truck Transport of Liquids**

The Hiland Operating Plant produces up to 20 truckloads of mixed NGLs daily. Access to rail transportation via pipeline: (1) reduces truck traffic on the area’s road network; (2) provides access to a wider range of markets via rail; and (3) is a more efficient and safer mode of transportation, thereby saving both cost and reducing the potential for accidents.

### **C.2 (c) Alternative Pipeline Design/Size**

Alternatives were examined with respect to the size of the pipeline, but the 6-inch line is best suited to match the capacity of the Hiland Operating Plant and is the most economically suited to meet the expected product volume capacity of the Hiland Operating Rail Terminal, located adjacent to the YSVR.

## **SECTION D LOCATION**

### **D.1 STUDY AREA**

The Project is located approximately 28 miles northwest of Watford City, 12 miles northwest of Alexander, 6 miles north of Cartwright and 20 miles southwest of Williston in unincorporated rural McKenzie County, North Dakota.

### **D.2 MAP OF PROPOSED CORRIDOR**

Since a consolidated application for a Certificate of Corridor Compatibility and a Route Permit is being submitted, maps (including U.S.G.S. Quad and Aerial Maps) of the proposed corridor and route for the Project can be found in Appendix 4.B of the Route Application (see Tab 4). The location of Exclusion and Avoidance Areas, as defined in Section 69-06-08-02 of the North Dakota Administrative Code, within the corridor are also depicted on the maps provided.

### **D.3 RELATIVE VALUE OF EACH OF THE CRITERIA**

Since this application is part of a consolidated application for a Certificate of Corridor Compatibility and a Route Permit, these matters are discussed in Sections B.4, B.5 and B.6 of the Route Permit portion of the application (see Tab 3).

### **D.4 CRITERIA TO BE EVALUATED**

Since this application is part of a consolidated application for a Certificate of Corridor Compatibility and Route Permit, the relative value of each of the criteria considered is discussed in Sections B.4, B.5 and B.6 of the Route Permit portion of the application (see Tab 3).

### **D.5 GENERAL MITIGATIVE MEASURES TO BE TAKEN**

Since this application is part of a consolidated application for a Certificate of Corridor Compatibility and a Route Permit, the mitigative measures that Hiland Operating proposes to take with respect to the Project are discussed in Sections B.4, B.5 and B.6 of the Route Permit application (see Tab 3).

### **D.6 QUALIFICATIONS OF PERSONS CONTRIBUTING TO THE STUDY**

The qualifications of the personnel who contributed to the corridor location study are:

(1) Kent Christopherson, Vice President/Chief Operations Officer - Hiland Operating, LP

Degrees:     B.S. in Mining Engineering & Geology  
                  South Dakota School of Mines and Technology  
                  Masters of Business Administration  
                  Nova Southeastern University

Qualifications: Certified Maintenance & Reliability Professional by the Society of  
                          Maintenance & Reliability Professionals  
                          Certified Lubrication Specialist by the Society of Tribologists &  
                          Lubrication Engineers.

Experience:   32 years in petroleum transportation field

(2) Michael Higgins, Director Project Management – Hiland Operating, LLC

Degree:       Bachelor of Business Administration, Kennedy Western University

Experience:   17 years experience in petroleum transportation field

(3) Kathleen Spilman, Managing Director – Keitu Engineers & Consultants, Inc.

Degrees: Bachelor of Science - Chemical Engineering, University of North Dakota  
Masters in Management, University of Mary

Experience: 31 years experience in petroleum refining and fuels transportation field as well as regulatory affairs and compliance.

Professional License

Registered Professional Engineer: North Dakota, South Dakota, Montana

## **D.7 MAPS**

### **D.7 (a) Map of Criteria Within Study Area**

Since a consolidated application for a Certificate of Corridor Compatibility and a Route Permit is being submitted, the maps (including U.S.G.S. Quad and Aerial Maps) of the proposed corridor and route of the Project can be found in Appendix B of the Route Permit portion of the application (see Tab 4). The location of Exclusion and Avoidance Areas, as defined in Section 69-06-08-02 of the North Dakota Administrative Code, within the corridor are also depicted on the maps provided.

### **D.7 (b) Mylar Maps of Study Area**

Use of Mylar<sup>®</sup> maps for recording and transmitting survey information has been replaced by geographic information systems (GIS) data management technology. A waiver request from this requirement is submitted in conjunction with this Consolidated Application.

The GIS software in current use by the Commission staff is ESRI's ArcGIS and companion software packages. A CD-ROM containing electronic copies of ArcGIS shapefiles outlining the proposed corridor has been included with this application in lieu of providing Mylar<sup>®</sup> map documentation and can be found in Tab 7.