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North Dakota Pipeline Company LLC

Before the Minnesota Public Utilities Commission

Docket No. PL-6668/CN-13-473

REVISED JANUARY 31, 2014

Application for Certificate of Need

Sandpiper Pipeline Project

SANDPIPER PIPELINE PROJECT

Summary of Updates

Certificate of Need Application		
Section	**Subpart**	**Description of Updates**
7853.0230	**Subpart 1**	Project mileage updated
	Subpart 1.D.1	Project mileage and description of Clearbrook Terminal updated
	Subpart 2	Preliminary list of permits and approvals needed updated
7853.0240[a]	**A**	Project mileage and entity sponsoring application updated
7853.0250	No updates	No updates
7853.0260	No updates	No updates
7853.0270	No updates	No updates
7853.0510	No updates	No updates
7853.0520	No updates	No updates
7853.0530[a]	**Subpart 1.D**	Project mileage updated
	Subpart 1.E(2)	Project mileage updated
7853.0540[a]	**A**	Project mileage updated
	A.4	Koch Pipeline Company Dakota Express Pipeline Project alternative updated

SANDPIPER PIPELINE PROJECT

Summary of Updates

7853.0600[a]	**A.2.3**	Koch Pipeline Company Dakota Express Pipeline Project alternative updated
7853.0610[a]	**Subpart 2.A**	Data relating to municipalities and population estimates along the route updated
	Subpart 2.B	Ownership of lands crossed updated
	Subpart 2.C	Soil characteristics in the Project area updated
	Subpart 2.D	Elevations in the Project area updated
	Subpart 2.E	Percentage of vegetation types along the route updated
	Subpart 2.F	Predominate land use along the route updated
	Subpart 2.G	Summary of wetlands crossed by the route updated
	Subpart 2.H	Number of roads and railroads crossed by the Project updated
	Subpart 2.J	Number of designated scenic byways crossed updated
	Subpart 2.K	Cultural resources within the Project's environmental survey area updated
7853.0620[a]	**Subpart 2**	Number of sites with potential contamination near the Project updated
	Subpart 3	Air permitting requirements at the new Clearbrook Terminal updated
7853.0630	No updates	No updates
7853.0640[a]	**Subpart 3**	Number of railroads crossed by HDD updated

SANDPIPER PIPELINE PROJECT

Summary of Updates

7853.0640[a]	**Subpart 4**	Estimate of agricultural land affected by construction updated
[a] Entity name updated throughout section from Enbridge Pipelines (North Dakota) LLC ('EPND') to North Dakota Pipeline Company LLC ('NDPC').		

7853.0230 GENERAL INFORMATION SECTION

Subpart 1. Content of section. Each application shall contain a general information section that shall include the following information:

North Dakota Pipeline Company LLC ("NDPC"), formerly known as Enbridge Pipelines (North Dakota) LLC ("EPND"), proposes to construct, own and operate a crude oil pipeline referred to herein as the Sandpiper Pipeline Project.[1] The Sandpiper Pipeline Project ("Project" or "Sandpiper") will transport crude oil from NDPC's Beaver Lodge Station, south of Tioga, North Dakota to Clearbrook, Minnesota and then on to an existing NDPC affiliated terminal in Superior, Wisconsin. The Project will be approximately 616 miles long, of which approximately 300 miles of 24-inch outer diameter ("OD") pipe will be in North Dakota, 302 miles in Minnesota (73 miles of 24-inch OD pipe and 229 miles of 30-inch OD pipe), and 14 miles of 30-inch OD pipe in Wisconsin.

A. the applicant's complete name, address, telephone number, and standard industrial classification codes;

The Applicant is:

North Dakota Pipeline Company LLC
1100 Louisiana, Suite 3300
Houston, Texas 77002
(713) 821-2000

The standard industrial classification code for crude oil pipelines is 4612.

B. the complete name, title, address, and telephone number of the official or agent to be contacted concerning the applicant's filing;

NDPC's contact information is:

NDPC Senior Legal Counsel	NDPC External Counsel
James Watts	Kevin Walli
North Dakota Pipeline Company LLC	Fryberger, Buchanan, Smith & Frederick
119 N. 25th Street E.	380 St. Peter Street, Suite 710
Superior, Wisconsin 54880	St. Paul, Minnesota 55102
218-464-5600	651-221-1044
james.watts@enbridge.com	kwalli@fryberger.com

[1] For the purposes of this docket (PL9/CN-13-473), it is understood that NDPC replaces EPND in previous submissions.

C. a brief description of the nature of the applicant's business and of the products that are manufactured, produced, or processed, or of the services rendered;

The applicant, North Dakota Pipeline Company LLC, is a limited liability company duly organized under the laws of the State of Delaware and qualified to do business in Minnesota. North Dakota Pipeline Company LLC was formerly known as Enbridge Pipelines (North Dakota) LLC. NDPC is a joint venture between Enbridge Energy Partners, L.P. ("EEP"),[2] NDPC's former sole parent entity, and Marathon Petroleum Corporation ("MPC"). References to EPND in this application should be understood to refer to NDPC.

EEP is a Delaware master limited partnership headquartered at 1100 Louisiana, Suite 3300, Houston, Texas 77002. Enbridge Energy, Limited Partnership, a wholly owned subsidiary of EEP, and an affiliate of Enbridge Inc., owns and operates the United States portion of the existing Enbridge Mainline System. Collectively, these affiliated entities, *excluding* NDPC, are referred to as "Enbridge" in this application.[3] The Enbridge Mainline System is the U.S. portion of an operationally integrated pipeline system spanning 3,300 miles across North America to connect producers and shippers of crude oil and natural gas liquids in western Canada with markets in the United States and eastern Canada.

NDPC owns and operates a crude oil gathering and interstate pipeline transportation system that gathers crude oil from points near producing wells in North Dakota and Montana. The NDPC System is commonly referred to as the North Dakota Pipeline System. Shippers on the NDPC System currently have the ability to transfer their product to the Enbridge Mainline System at Clearbrook, Minnesota. Once on the Enbridge Mainline System, shippers have access to most major crude oil refinery markets in the Midwest (which is described by the Department of Energy as Petroleum Area Defense District ("PADD") 2), Canada and as far south as Cushing, Oklahoma and the Texas Gulf Coast. Additionally, at Clearbrook, Minnesota shippers have access to refineries in the Minneapolis/St. Paul area via interconnections with Minnesota Pipe Line Company, a third-party crude oil pipeline.

Information about NDPC is available on the Company's website at www.enbridgeUS.com. NDPC and Enbridge have a proven track record

[2] Enbridge Energy Partners, L.P., Enbridge Inc., and other Enbridge affiliates, excluding NDPC, are collectively referred to as Enbridge in this Application.
[3] Enbridge Energy, Limited Partnership was formerly known as Lakehead Pipe Line Company, Limited Partnership.

which demonstrates their ability to successfully design and execute pipeline projects in the United States such as the one proposed herein, and have efficiently and reliably operated crude oil and liquid petroleum pipeline facilities since 1950.

D. a brief description of the proposed facility, its complete address (if known) or general location, a brief description of its planned use, its estimated cost, its planned in service date, and its design capacity in gallons (LPG storage) or its maximum design throughput in barrels per day and its size in Mbpd-miles (petroleum pipeline);

D.1. A brief description of the proposed facility and the area to be served:

The Sandpiper Pipeline Project consists of approximately 616 miles of 24-inch and 30-inch OD crude oil pipeline, including all associated valves and appurtenances. In Minnesota, the Project comprises 73 miles of 24-inch OD pipe west of Clearbrook, Minnesota and 229 miles of 30-inch OD pipe east of Clearbrook.

This Project will originate at NDPC's Beaver Lodge Station, near Tioga, North Dakota, and extend to a new terminal facility to be constructed near Clearbrook, Minnesota, and then on to an NDPC affiliated terminal and tank farm facility in Superior, Wisconsin. Approximately 300 miles will be located in North Dakota, beginning at NDPC's Beaver Lodge Station, near Tioga, North Dakota, and extending east to cross the North Dakota and Minnesota border approximately 2 miles south of Grand Forks, North Dakota. Approximately 302 miles will be located in Minnesota, beginning at the North Dakota border south of Grand Forks, North Dakota in Polk County, and extending east to Clearbrook, Minnesota. At Clearbrook, the preferred route will turn south and generally follow the existing Minnesota Pipe Line Company right-of-way to a point near Hubbard, Minnesota. From Hubbard, the preferred route turns east, following parts of existing third-party rights-of-way, where practicable, to the Wisconsin border in Carlton County, Minnesota. The preferred route will traverse Polk, Red Lake, Clearwater, Hubbard, Cass, Crow Wing, Aitkin, and Carlton Counties in Minnesota. The last 14 miles of the Project will be located entirely within Douglas County, Wisconsin where the pipeline will end at Enbridge's tank farm and terminal facility near Superior, Wisconsin.

As part of the Project, NDPC also plans to develop a terminal facility near Clearbrook, Minnesota, which will include two (2) crude oil storage tanks holding approximately 150,000 barrels ("bbls") each, two (2) 500 horse

power ("HP") injection pumps to move up to 150,000 barrels per day ("bpd") from the existing NDPC Line 81 into Sandpiper, one (1) 800 HP transfer pump for delivery to NDPC, meters, terminal piping, interconnections, valves, manifold, sumps, electrical substation and associated facilities, a storage building and a maintenance building.

Additionally, NDPC also plans to construct one new pump station near Clearbrook, Minnesota (See Appendix G.3 of the Environmental Information Report ("EIR") for a schematic drawing of the proposed terminal and pump station). The Clearbrook Pump Station will be located within the footprint of the new NDPC Clearbrook Terminal. Aboveground launcher/receiver traps will be constructed near Pine River, along with block (isolation) valves and a small enclosure to house power and control systems for valve control.

NDPC anticipates that the permanent right-of-way and temporary workspace land requirements will vary along the preferred route in order to accommodate landowner, environmental or constructability concerns. Table 7853.0230-1-D.1-1 details the anticipated land requirements in Minnesota.

Table 7853.0230-1-D.1-1
Land Requirements

Route	Permanent Right-of-Way (ft)	Temporary Workspace (ft)	Total Land Requirements (ft)
Co-Located Route from North Dakota Border to Clearbrook	55[A] (~25 new)	65 (upland)	120 (upland)
		40 (wetland)	95 (wetland)
Co-Located Route from East of Clearbrook to Wisconsin Border	50	70 (upland)	120 (upland)
		45 (wetland)	95 (wetland)
Greenfield Areas in Minnesota	50	70 (upland)	120 (upland)
		45 (wetland)	95 (wetland)

[A] A portion of the permanent right-of-way will include the existing NDPC and Enbridge permanent easements.

Permanent right-of-way will be needed for the Project to accommodate the new pipeline and provide sufficient space for a buffer zone from any existing pipeline or utility, as well as to maintain a buffer zone for safety

on either side of the pipeline. Typical drawings depicting right-of-way requirements are included in Appendix F of the EIR. A final determination of the project's right-of-way requirements will be made following completion of field surveys and preliminary engineering design activities.

D.2. Purpose and planned use:

The Project will transport growing supplies of North Dakota crude oil to refining centers in the Midwest and the East Coast. The Project will be operationally integrated with the NDPC System, and will be used to transport crude oil to the Enbridge Superior terminal facilities for subsequent delivery of crude oil supplies on the Enbridge Mainline System. To meet the need for safe and economical transportation capacity, the Project will provide up to 225,000 barrels per day ("bpd") of new crude oil capacity from North Dakota.[4] Additionally, the Project will have the ability to deliver crude oil at the new Clearbrook Terminal as redundant service[5] for NDPC's existing Line 81.

Enbridge's shippers will use the pipeline for the transportation of crude oil to Enbridge's breakout tankage facilities at Clearbrook, Minnesota or Superior, Wisconsin. At Clearbrook, the crude oil will be delivered to interconnected facilities operated by Minnesota Pipe Line Company for delivery to Minnesota refineries. At Superior, the crude oil will be delivered into the Enbridge Mainline System and other third-party pipelines for delivery to refineries in the Midwest and the East Coast.

D.3. An estimate of the total cost of construction:

NDPC estimates the cost of constructing the proposed 24- and 30-inch pipeline to be $2.6 billion, including $1.2 billion in Minnesota.

D.4. Anticipated construction and operation schedule:

NDPC plans to begin construction of the Project in the fourth quarter of 2014 with an anticipated completion and in-service date of first quarter 2016.

[4] The Project will have a capacity of 375,000 bpd between Clearbrook, Minnesota and Superior, Wisconsin. Total new capacity, however, is 225,000 bpd as the 150,000 bpd that will enter Sandpiper at Clearbrook is currently transported to Clearbrook on NDPC's existing Line 81 and to Superior, Wisconsin on the Enbridge Mainline System.
[5] Redundant service is indicative of system design that allows for duplication of delivery if one component is unavailable.

D.5. Design capacity:

The Project will have an annual capacity of 250,000 bpd in North Dakota between Beaver Lodge and Berthold, an annual capacity of 225,000 bpd from Berthold, North Dakota to Clearbrook, Minnesota, and an annual capacity of 375,000 bpd from Clearbrook, Minnesota to Superior, Wisconsin. Within Minnesota, the 24-inch-diameter segment from the North Dakota border to Clearbrook, Minnesota will have an annual average capacity of 225,000 bpd. In Minnesota, this computes to 18,450 Million barrel per day-miles ("Mbpd-miles") between the North Dakota border and Clearbrook, Minnesota and 83,250 Mbpd-miles between Clearbrook and the Wisconsin border.

At Clearbrook, Minnesota, Sandpiper will receive up to an additional 150,000 bpd from the existing NDPC Line 81. The segment from Clearbrook, Minnesota to the Wisconsin border will be a 30-inch diameter pipeline and will have an annual average capacity of 375,000 bpd. Additionally, Sandpiper will have the ability to provide redundant service at Clearbook to the existing NDPC Line 81 in order to ensure reliable deliveries of 60,000 bpd annual capacity into the Minnesota Pipe Line Company System for delivery to Minnesota refineries.

Liquids pipelines are generally designed at a specified capacity for a known liquid. Most liquids pipelines transport a variety of liquids. The change in fluid characteristics (e.g., density and viscosity) of the transported liquids will affect the capacity of the pipeline. Liquids are also batched, meaning that different liquids, or in this case, grades of crude oil, are shipped at different times, generally in a repeatable sequence. Both the fluid characteristics and batch sequence will affect the capacity of the pipeline. Table 7853.0230-1-D.5-1 provides design data pertinent to the new 24-inch and 30-inch portions of the Project.

Two definitions are used to describe pipeline capacity: Design Capacity and Annual Capacity.

- **Design Capacity**: The theoretical capacity of the pipeline and pumping facilities, at its current or proposed design state for given types of liquids and their batch sequence. Design Capacity is calculated assuming theoretically ideal operating conditions.

- **Annual Capacity**: The average sustainable pipeline throughput over a year. Annual Capacity is calculated assuming historic average annual operating conditions. These operating conditions include scheduled and unscheduled maintenance, normal operating issues, and crude supply availability. Annual Capacity of a pipeline is typically 90% of Design Capacity.

Table 7853.0230-1-D.5-1
Sandpiper Pipeline Project Capacity Definitions

		24" Pipeline from Berthold, ND to Clearbrook, MN (bpd)	30" Pipeline from Clearbrook, MN to Superior, WI (bpd)
Ultimate Design Capacity	Maximum economic expansion capacity of individual line. Requires additional pumping horsepower over current design to meet this capacity.	406,000	711,000
Ultimate Annual Capacity	Maximum economic expansion capacity of individual pipeline that is sustainable average daily rate per day over a year.	365,000	640,000
Initial Design Capacity	Theoretical capacity	250,000	417,000
Initial Annual Capacity (90%)	Average sustainable rate: average barrels per day over a year (90% of Design Capacity)	225,000	375,000

E. the total fee for the application as prescribed by part 7853.0210, and the amount of the fee submitted with the application; and

The total fee for the application as prescribed by part 7853.0210, Subpart 1.B. is $50,000 and is based on the following formula and a total fee cap of $50,000.

> Base payment of $5,000.00, plus $1.00 per Mbpd (Design Capacity) times the number of miles of pipeline in Minnesota.

The computation of the above formula is as follows:

> West of Clearbrook
> $5,000 + ($1.00 x (250 Mbpd x 75))
> $5,000 + ($1.00 x 18,750)
> $5,000 + $18,750 = $23,750
>
> East of Clearbrook
> $5,000 + ($1.00 x (417 Mbpd x 224))
> $5,000 + ($1.00 x 93,408)
> $5,000 + $93,408 = $98,408
>
> Minnesota Total: $122,158

NDPC submitted $50,000 as required by Minn. R. 7853.0210.

F. the signatures and titles of the applicant's officers or executives authorized to sign the application, and the signature of the preparer of the application if prepared by an outside agent.

This application is submitted by North Dakota Pipeline Company LLC.

Bruce Stevenson
Corporate Secretary
North Dakota Pipeline Company LLC

Subpart 2. List of government authorities. Each application shall contain a schedule in the general information section, which shall list all known federal, state, and local agencies or authorities with which the applicant must file for the proposed facility. The following information shall be included on the schedule:

A. the names of all known federal, state, or local agencies or authorities with which the applicant must file;

B. the title of each required permit or certificate issued by the authorities named in response to item A and needed by the applicant;

C. for each permit or certificate listed in response to item B, the date an application was filed or the projected date of future application;

D. for each permit or certificate listed in response to item B, the actual date a decision was made on the application, or the anticipated decision date; and

E. for each permit or certificate listed in response to item B for which an application was filed, the disposition or status of the permit or certificate.

Table 7853.0230-2.1 lists the government agencies or authorities with which NDPC must file for the Sandpiper Pipeline Project. This table lists the title of each permit or certificate issued, anticipated application and decision dates, and status of the permit or certificate.

In addition to this Certificate of Need ("CN") application, NDPC will also be filing an application for a Pipeline Routing Permit with the Minnesota Public Utilities Commission ("MPUC"). Public meetings will be held which will provide local governmental units and landowners with information about NDPC's preferred route.

Table 7853.0230-2.1
Preliminary List of Government Authorities and Titles of Permits/Approvals
(Minnesota Portion of Sandpiper Pipeline Project Only)

Name of Agency	Title of Permit/Approval	Date of Application [a]	Date of Decision [b]	Status
United States Army Corps of Engineers ("USACE") – St. Paul District and Minnesota Pollution Control Agency	Section 10/404 Individual Permit and associated state 401 Individual Water Quality Certification	February 2014	January 2015	Preliminary Application reviewed with USACE October 2013
United States Fish and Wildlife Service	Section 7 Endangered Species Act Consultation (Federal endangered species)	April 2013	January 2015	Initial consultation in April 2013. Further consultation pending identification of a lead federal agency
Minnesota Public Utilities Commission	Pipeline Routing Permit	November 2013	January 2015	Application submitted
	Certificate of Need	November 2013	January2015	Application submitted
Minnesota Department of Natural Resources	License to Cross Public Waters	September 2013	October 2014	Preliminary Application submitted
	License to Cross Public Lands	September 2013	October 2014	Preliminary Application submitted
	Water Appropriation General Permit (hydrostatic test water and trench dewatering)	2015	2015	Pending submittal
	State Endangered Species Consultation	April 2013	December 2014	Consultation initiated
Minnesota Pollution Control Agency	Clearbrook Station New Source Performance Standards Notifications and Submittals	June 2014	June 2015	Pending submittal
	NPDES Individual Construction Stormwater, Hydrostatic Test, and Trench Dewatering Permit – Pipeline Construction	May 2014	November 2014	Consultation initiated, pending submittal
	NPDES General Construction Stormwater Coverage – Pipeyards and Contractor Yards	March 2014	April 2014	Consultation initiated, pending submittal

Table 7853.0230-2.1
Preliminary List of Government Authorities and Titles of Permits/Approvals
(Minnesota Portion of Sandpiper Pipeline Project Only)

Name of Agency	Title of Permit/Approval	Date of Application [a]	Date of Decision [b]	Status
Minnesota State Historic Preservation Office	Cultural Resources Consultation, NHPA Section 106 Clearance	April 2013	October 2014	Consultation initiated. Further consultation pending identification of a lead federal agency
Minnesota Department of Agriculture	Agricultural Protection Plan	April 2013	January 2015	Consultation initiated
Minnesota Department of Transportation	Road Crossing Permits	October 2014	April 2015	Pending submittal
Mississippi Headwaters Board	Local Land Use Review	July 2013	September 2014	Consultation initiated
Red Lake and Wild Rice Watershed Districts	Watershed District Permit	March 2014	May 2014	Consultation initiated pending submittal
Local Government Units	Wetland Conservation Act Utility Exemption	February2014	January 2015	Consultation initiated; concurrent with USACE application
Local/County	Permits pertaining to off-right-of-way yard use	October 2014	April 2015	Pending submittal

[a] Actual date of initial consultation/anticipated dates for submission.
[b] Projected dates of action.

7853.0240 NEED SUMMARY

Each application shall contain a section that summarizes the major factors that justify the need for the proposed facility. The summary shall not exceed, without the approval of the commission, 15 pages in length, including text, tables, schedules, graphs, and figures.

A. Planned Use and Purpose for the Sandpiper Pipeline Project

The Sandpiper Pipeline Project is an approximately 616-mile 24-inch and 30-inch OD crude oil pipeline that will transport Bakken and Three Forks crude oil from growing production regions in the Williston Basin[1] of eastern Montana and western North Dakota. As described in more detail in Section 7853.0230, the Project begins at NDPC's[2] Beaver Lodge Station, south of Tioga, North Dakota and extends to a new terminal facility to be constructed near Clearbrook, Minnesota, and then on to an affiliated Enbridge terminal and tank farm facility in Superior, Wisconsin. From the Superior terminal, the crude oil volumes can be transported to other refining markets via the Enbridge Mainline System or other third-party pipelines. Approximately 302 miles of the Project will cross Minnesota.

This Project is part of NDPC's ongoing efforts, as the operator of an interstate common-carrier crude oil pipeline system, to continuously evaluate and respond to short- and long-term crude oil supply and demand patterns in North America. As part of this effort, NDPC has worked diligently with its shippers, refiners, and industry members. Refineries need access to secure and reliable crude oil supplies produced in North America to meet their feedstock requirements while reducing reliance on crude oil imported from less-friendly, non-North American sources. This shift in supply source will help reduce the United States' reliance on crude oil imports from less stable regions of the world. Refineries also need efficient, cost-effective, and safe transportation systems for the crude oil used to create refined products. The Project meets these demands.

NDPC developed the Project based on consultations with shippers and refiners and through careful evaluation of alternatives and regional infrastructure. NDPC concluded that the Project is the most prudent and cost

[1] The Bakken formation is currently the largest contributor to the total crude oil production in the Williston Basin, the oil industry refers to all of the crude oil production in the Williston Basin as "Bakken crude oil". The Williston Basin spans parts of western North Dakota, eastern Montana and parts of Saskatchewan and Manitoba.

[2] North Dakota Pipeline Company LLC, is a limited liability company duly organized under the laws of the State of Delaware and is referred to as "NDPC" in this document. NDPC was formerly known as Enbridge Pipeline (North Dakota) LLC ("EPND"). NDPC is a joint venture between Enbridge Energy Partners, L.P. ("EEP") which is a Delaware master limited partnership partnership and Marathon Petroleum Company LP. Enbridge Energy, Limited Partnership, a wholly owned subsidiary of EEP and an affiliate of Enbridge Inc., owns and operates the U.S. portion of the existing Enbridge Mainline System. Collectively, the affiliated entities excluding NDPC are referred to as "Enbridge" in this document.

effective solution to meet its shippers' near-term transportation requirements while providing a long-term capacity solution. The Project also provides flexibility and potentially scalable incremental capacity expansions, subject to demand and permitting requirements, to satisfy potential additional future demand from shippers and refiners for crude oil produced in the Bakken region.

The Project will expand the capacity of the existing NDPC System between Beaver Lodge, North Dakota and Clearbrook, Minnesota and then extend the NDPC system to Superior, Wisconsin. The Project will have an initial annual capacity of 225,000 bpd of crude oil into Clearbrook, Minnesota and an initial annual capacity of 375,000 bpd from Clearbrook, Minnesota to Superior, Wisconsin. The incremental 150,000 bpd that is transported between Clearbrook and Superior results from injection of Bakken crude oil from NDPC's Line 81 into Sandpiper at Clearbrook. The current Line 81 connection to the Enbridge Mainline System at Clearbrook will be terminated once the Project is placed in service.

The Project will also be able to deliver an annual capacity up to 60,000 bpd of crude oil at the new Clearbrook Terminal. As a result, Sandpiper will provide redundant service for deliveries to the Minnesota Pipe Line Company's facilities during routine maintenance activities on NDPC's existing Line 81, or to satisfy additional demand from refineries connected to the Minnesota Pipe Line System. NDPC's existing Line 81 currently delivers crude oil to the Minnesota Pipe Line System, which then transports the crude oil to refiners in the Minneapolis/St. Paul area (Northern Tier Energy and Flint Hills Resources). Minnesota's refiners rely heavily on NDPC's Line 81 and its affiliated Enbridge Mainline System for deliveries at Clearbrook, as these deliveries provide the majority of the crude oil required by Minnesota's refineries. The Project provides a significant benefit to the Minnesota refiners, as it not only expands their access to secure domestic crude oil supplies but it also ensures such crucial supplies are delivered at Clearbrook to meet their feedstock requirements.

The Project will deliver to the existing terminal facility in Superior, Wisconsin, which is owned and operated by an NDPC affiliate. From Superior, shippers will have access to refinery markets that are directly or indirectly served via the Enbridge Mainline System, or through other affiliated or nonaffiliated interconnecting pipelines.

NDPC designed the Project to allow for future expandability without installing a new pipeline. The Project is scalable up to an ultimate design capacity of 406,000 bpd from Berthold, North Dakota to Clearbrook and 711,000 bpd from Clearbrook to Superior, Wisconsin. These expansions would be made through the addition of pumping stations as necessitated by future growth of Bakken crude production and corresponding demand by refineries in the Midwest and the East Coast. Such an expansion plan is not under active consideration or

pending approval. NDPC and its customers, however, continuously assess demand and supply patterns and various other pipeline infrastructure development projects to determine if and when future expansions or changes are needed to meet market demand.

B. Petroleum Supply and Demand in the United States

North American light crude oil supply is expected to continue to grow for at least the next decade, and then remain well above historical levels for many more years. The breakthrough in technological advances in unconventional[3] crude oil production has resulted in rapidly changing petroleum supply and demand trends in North America. According to the most recent statistics available from the United States Energy Information Administration ("EIA"),[4] now accessible shale formations have helped increase United States crude oil production from 5,652 thousand barrels per day ("kbpd") in 2011 to 6,488 kbpd in July 2013.[5] At the same time, United States crude oil reserves increased from 25.2 billion barrels in 2010 to 29.0 billion barrels in 2011.[6]

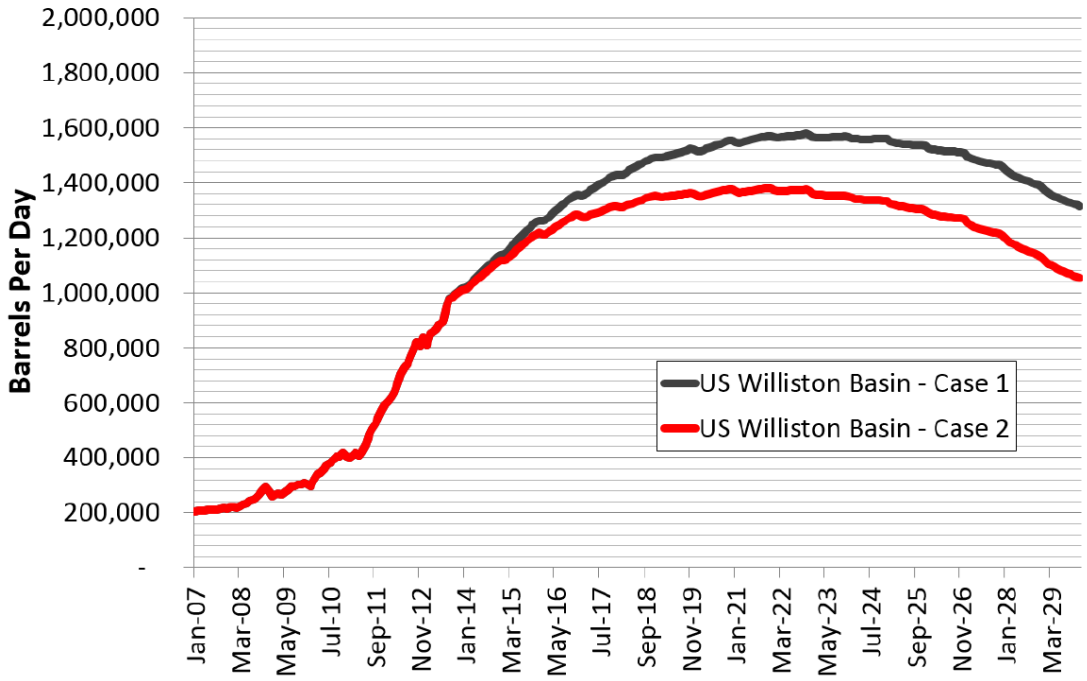
The Williston Basin, which includes the Bakken and Three Forks formations, is one of the major sources of the United States unconventional crude oil supply. The Williston Basin spans parts of western North Dakota, eastern Montana and parts of Saskatchewan and Manitoba. The subsurface Bakken and Devonian Three Forks formations are the direct or indirect source for most of the crude oil currently produced in the Williston Basin. Since the Bakken formation is currently the largest contributor to the total crude oil production in the Williston Basin, the oil industry refers to all of the crude oil production in the Williston Basin as "Bakken crude oil." The United States Geological Service ("USGS") estimates that the Three Forks formation holds about 3.73 billion barrels of technically recoverable crude oil and that the Bakken formation holds 3.65 billion barrels of technically recoverable crude oil. This 2013 combined estimate of the approximately 7.4 billion barrels for the Three Forks and the Bakken formations almost doubles the initial assessment the USGS made back in 2008.[7]

Crude oil production in North Dakota has significantly increased over the last six years, rising from 138,000 bpd in January 2008 to 911,000 bpd in August 2013.[8] Supply forecasts from the North Dakota Pipeline Authority ("NDPA") predict continued growth in Bakken production over the next 8 to 10 years and

[3] Unconventional crude oil includes tight oil deposits, extra-heavy oil and bitumen, and oil shales. Tight oil is conventional oil that is found within reservoirs with very low permeability such that the oil will not flow to the wellbore at economic rates without assistance from technologically advanced drilling and completion processes.
[4] The statistical arm of the United States Department of Energy.
[5] EIA energy data at http://www.eia.gov/.
[6] EIA Summary Report at http://www.eia.gov/naturalgas/crudeoilreserves/?src=Petroleum-f2.
[7] USGS at http://www.doi.gov/news/pressreleases/usgs-releases-new-oil-and-gas-assessment-for-bakken-and-three-forks-formations.cfm?renderforprint=1& .
[8] North Dakota DMR at http://northdakotapipelines.com.

then a gradual decline over the next 10 years before moderating at production levels above 1 million bpd (See Figure 7853.0240-B.1). For example, production is expected to peak between 1.3 and 1.5 million bpd in 2022 and gradually decline to 1.10 million bpd in 2029.[9]

Figure 7853.0240-B.1
Forecasting Williston Basin Oil Production (bopd)[10,11]



Existing long-haul pipeline capacity will not be sufficient to accommodate growth in crude oil production from the Williston basin as early as 2017.[12] Rail could be used to move these incremental volumes but Minnesota lies between the Bakken formation and refinery locations in the Midwest and the East Coast. Significant amounts of Bakken crude are already transported through Minnesota by rail as the crude oil is shipped to refineries throughout the United States. Most of the Bakken crude oil moved on freight railroads in Minnesota passes through major population centers on tank cars as part of large unit trains. The Project provides an alternative means of transporting Bakken crude oil to refineries that is safer, less environmentally harmful, and more economical. For example, transportation cost analysis indicates that pipeline transport is roughly sixty percent (60%) of the cost of rail transport. Pipeline

[9] NDPA Energy Development and Transmission Committee Presentation at https://www.dmr.nd.gov/pipeline/.
[10] *Id.*
[11] Case 1 is the base case from the NPDA forecast and Case 2 is the high forecast.
[12] NDPA House Energy and Natural Resources Committee Presentation on January 11, 2013 at https://www.dmr.nd.gov/pipeline/.

transportation incurs far lower labor and energy costs and produces fewer greenhouse gas emissions than other competing transportation modes, and only pipeline transportation avoids the need to return an empty shipping container back to the point of origination (the impacts of rail alternatives are further addressed in Section 7853.0540).

C. The Project provides refiners access to secure and reliable domestic production supplies to meet rising refinery demands

The increased supply of crude oil being produced in the Bakken region is addressing a corresponding rise in demand from refineries in the Midwest and the East Coast for crude oil produced in North America. Refineries are reducing reliance on other foreign production regions, specifically countries outside North America, which are often more unstable and less reliable.

The 2013 Index of United States Energy Security Risk Annual Report published by the Institute for 21st Century Energy, an affiliate of the United States Chamber of Commerce, commented that the "impacts of the unconventional oil and natural gas boom lowered United States energy security risks in 2012 by increasing supply security, reducing net imports, and putting downward pressure on energy costs and expenditures."[13] Adequate transportation infrastructure to move the oil to market is necessary in order to continue to realize the benefits of the unconventional oil boom in the United States. This Project meets this national objective as it links the prolific producing regions of the Bakken and Three Forks formations to premium refineries and major marketing centers that may otherwise have to rely on unstable sources of crude oil supplies to meet their feedstock requirements.

The origin of the Project is geographically located within the "Big Five" counties of North Dakota,[14] which is the largest producing area of the Williston Basin. This gives United States refineries and shippers a competitive advantage for access to abundant, safe, and long-term stable sources of crude oil supplies to meet their feedstock requirements.

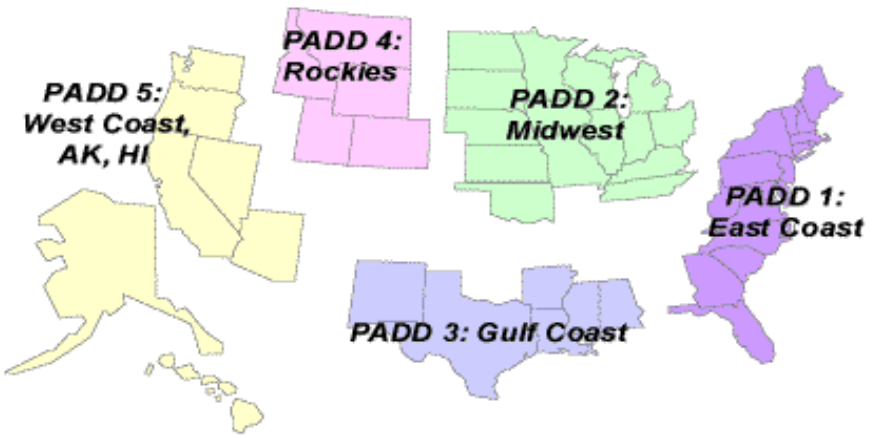
The transportation of crude oil to regional refineries by pipeline is an essential component of the supply chain that delivers refined petroleum products to Midwestern consumers. In fact, pipelines deliver almost all of the crude oil processed by Midwestern refineries. Minnesota's two refineries, together with other Midwestern refineries that supply refined product to Minnesota, fall within the Petroleum Administration for Defense District ("PADD") 2, (see

[13] 2013 Index of U.S. Energy Security Risk Annual Report at http://www.energyxxi.org/2013-us-index-of-energy-security-risk.
[14] The "Big Five" counties are Divide, McKenzie, Williams, Mountrail, Dunn.

Figure 7853.0240-C.1, below). More than 434 million barrels of crude were transported by pipeline into PADD 2 from other PADDs in 2012.[15]

Moreover, the Midwest (PADD 2), like other PADDs, is increasing its reliance on North American crude oil as a safer and more reliable source. In 2012, the PADD 2 refining area imported 82.9% less crude oil from outside North America (primarily the Middle East) than in 2007.[16] The Project will support the shift from non-North American crude oil by providing critical access that links rapidly increasing production in the Williston Basin to Minnesota's refineries. Other refinery and marketing centers in the Midwest and East Coast will also be connected to the Bakken supplies via NDPC's affiliated Enbridge Mainline System and other interconnecting third-party pipelines. In 2012 Enbridge delivered approximately seventy-nine percent (79%) of the crude oil to meet refinery demand in Minnesota, eighty-five percent (85%) in Wisconsin and seventy-five percent (75%) in the greater Chicago area.

Figure 7853.0240-C.1
Petroleum Administration for Defense Districts



PADDs are very interdependent. Although the Midwest (PADD 2) is increasing its consumption of North American crude oil over non-North American sourced crude oil, refineries in the Midwest are unable to meet 100% of the demand for refined products in this region. Accordingly, the refineries in other PADD regions continue to supply the Midwest with the necessary refined petroleum products demanded by Americans in the Midwest.

As a result, there is significant interdependence between PADD regions, with both crude oil and refined products transported between PADDs. The

[15] EIA energy data at http://www.eia.gov/.
[16] *Id.*

Midwest historically has been significantly net short refined product, meaning that it consumes more petroleum than it refines, with the shortfall met by refineries located on the Gulf Coast. The Midwestern supply-demand balance has become more even in recent years, but the Midwest continues to receive sizable volumes of refined product from the Gulf Coast.

According to the EIA, the petroleum-using public in the Midwest consumed over 4.42 million bpd of refined petroleum products in 2012, which includes gasoline, diesel, jet fuel, asphalt, heating fuel and petrochemical products. PADD 2's total 2012 refining capacity was 3.72 million bpd, which represents a shortfall of approximately 700,000 bpd.[17]

This Project will provide connectivity at Clearbrook, Minnesota and Superior, Wisconsin to the following refineries that are accessible either directly or indirectly off the Enbridge Mainline System as shown on Table 7853.0240-C.1.

The Project is needed to meet the transportation requirements of the Bakken oil producers and refineries. The additional pipeline capacity to be provided by the Project will help alleviate the lack of crude oil pipeline infrastructure from the Williston Basin to premium refinery and marketing hubs. That serves the public's interest by providing improved, cost-effective and safe refinery access to an abundant, secure, and reliable source of domestic crude oil. That will, in turn, allow the refineries to satisfy local and national consumer demand for refined products.

Table 7853.0240-C.1
Refineries Served Directly or Indirectly by Enbridge Systems

Refinery	Location	Capacity (cubic meters/day)	Capacity (barrels/ day)	Connected Directly from Enbridge	Connected Indirectly
PADD II - Minnesota and Wisconsin					
Northern Tier Energy	St. Paul Park, Minnesota	11,765	74,000		Yes - Minnesota Pipeline
Flint Hills Resources	Rosemount, Minnesota	50,876	320,000		Yes - Minnesota Pipeline
Calumet	Superior, Wisconsin	5,247	33,000	Yes	
Total		**67,888**	**427,000**		
PADD II - Illinois and Indiana					
ExxonMobil Refining & Supply Co.	Joliet, Illinois	38,157	240,000	Yes	

[17] *Id.*

Table 7853.0240-C.1
Refineries Served Directly or Indirectly by Enbridge Systems

Refinery	Location	Capacity (cubic meters/day)	Capacity (barrels/ day)	Connected Directly from Enbridge	Connected Indirectly
Citgo Petroleum Corp.	Lemont, Illinois	25,279	159,000	Yes	
BP PLC	Whiting, Indiana	64,390	405,000	Yes	
Total		**127,826**	**804,000**		
PADD II - Kentucky and Southern Illinois and Indiana					
Marathon Petroleum Co.	Robinson, Illinois	32,751	206,000		Yes - Mustang/Marathon
WRB Refining	Wood River, Illinois	56,599	356,000		Yes - Mustang/Capwood
Countrymark Cooperative	Mt. Vernon, Indiana	4,293	27,000		Yes - Mustang/Marathon
Marathon Petroleum Co.	Catlettsburg, Kentucky	38,157	240,000		Yes - Mustang/Marathon
Total		**131,800**	**829,000**		
PADD II - Michigan and Ohio					
BP PLC	Toledo, Ohio	24,166	152,000	Yes	Yes - Sun Pipeline
PBF Energy Co.	Toledo, Ohio	27,028	170,000		Yes - Sun Pipeline
Marathon Petroleum Co.	Detroit, Michigan	19,079	120,000	Yes	Yes - Sun Pipeline
Marathon Petroleum Co.	Canton, Ohio	12,719	80,000		Yes - Mustang/Marathon
Husky	Lima, Ohio	25,756	162,000		Yes - Mustang/Marathon
Total		**108,747**	**684,000**		
PADD I - Pennsylvania					
United Refining	Warren, Pennsylvania	11,129	70,000		Yes - Kantone
Ontario					
Imperial Oil	Nanticoke, Ontario	18,125	114,000	Yes	

Table 7853.0240-C.1
Refineries Served Directly or Indirectly by Enbridge Systems

Refinery	Location	Capacity (cubic meters/day)	Capacity (barrels/ day)	Connected Directly from Enbridge	Connected Indirectly
Imperial Oil	Sarnia, Ontario	18,920	119,000	Yes	
Shell Canada	Corunna, Ontario	11,288	71,000	Yes	
Suncor Energy Products	Sarnia, Ontario	13,514	85,000	Yes	
Nova Chemicals (Canada)	Corunna, Ontario	12,719	80,000	Yes	
Total		**74,565**	**469,000**		
PADD III - Cushing					
Coffeyville Resources	Coffeyville, Kansas	19,079	120,000	Yes	
WRP Refining	Borger, Texas	23,212	146,000		Yes-Spearhead
ConocoPhillips	Ponca City, Oklahoma	30,208	190,000		Yes-Spearhead
Holly Frontier	El Dorado, Kansas	21,145	133,000		Yes-Spearhead
NCRA	McPherson, Kansas	13,196	83,000	Yes	
Holly Frontier	Tulsa, Oklahoma	19,873	125,000	Yes	
Valero Energy Corp.	Ardmore, Oklahoma	14,627	92,000		Yes-Spearhead
Valero Energy Corp.	Sunray, Texas	27,028	170,000		Yes-Spearhead
CVR Refining	Wynnewood	11,129	70,000		Yes-Spearhead
Total		**179,497**	**1,129,000**		
PADD III – United States Gulf Coast					
PRSI	Pasadena, Texas	18,602	117,000	Yes - Seaway	
Shell	Deer Park, Texas	51,989	327,000	Yes - Seaway	
ExxonMobil	Houston, Texas	89,192	561,000	Yes - Seaway	
LyondellBasell	Houston, Texas	42,927	268,000	Yes - Seaway	
Valero	Houston, Texas	25,438	160,000	Yes - Seaway	

Table 7853.0240-C.1 Refineries Served Directly or Indirectly by Enbridge Systems					
Refinery	**Location**	**Capacity (cubic meters/day)**	**Capacity (barrels/ day)**	**Connected Directly from Enbridge**	**Connected Indirectly**
Valero	Texas City, Texas	38,952	245,000	Yes - Seaway	
BP	Texas City, Texas	71,703	451,000	Yes - Seaway	
Marathon	Houston, Texas	12,719	80,000	Yes - Seaway	
Total	Port Arthur, Texas	26,869	169,000		Yes - Mustang/Pegasus
ExxonMobil	Port Arthur, Texas	54,692	344,000		Yes - Mustang/Pegasus
Motiva	Port Arthur, Texas	104,932	660,000		Yes - Mustang/Pegasus
Valero	Port Arthur, Texas	49,286	310,000		Yes - Mustang/Pegasus
Total		**587,301**	**3,692,000**		

D. Applicant's proposed Projects benefit Minnesota general public

D.1. Increased amounts of secure supply of discounted crude oil produced in the Bakken region is economically attractive to regional refineries

Minnesota's refinery capacity somewhat exceeds demand for refined products within the state However, Minnesota exports refined products to neighboring states, while also importing refined products from neighboring states. This is not uncommon in the United States because the refined product distribution system seeks to efficiently connect refineries with various demand centers to minimize transportation costs. North Dakota and Wisconsin also simultaneously import and export refined products. Neighboring states are highly interdependent with regard to delivery of refined products from refineries to the consuming public.

Minnesota serves as a key supplier of refined petroleum products to the public in the Midwest. A secure supply of crude oil to Minnesota refineries, and refineries in other parts of the Midwest and East Coast, is essential to meet the public's need for secure supplies of refined products. The EIA reports the refined product yield for the four refineries in the Refining

District of North Dakota, South Dakota, Minnesota, and Wisconsin.[18] Taken together, Minnesota and three of its neighboring states are net short refined products, meaning that the refineries in these four states produce less refined products than the consuming public requires.

This is exacerbated because there is considerable variability in the monthly production volume of the refineries in the four-state area. Even if the refined product supply and demand in the four-state area was balanced on an annual average basis, the public in Minnesota, North Dakota, South Dakota, and Wisconsin would experience periodic shortfalls in refined product supply, with the corresponding price spikes, when local supply falls short of local demand. The refined product pipeline interconnectivity with neighboring states and regions enables Minnesota, North Dakota, South Dakota and Wisconsin to manage periodic supply shortfalls. That, in turn, minimizes refined product price volatility.

Refineries must have adequate and reliable access to crude oil to produce the refined products required by the public in Minnesota and neighboring states. The Project better ensures that refineries in Minnesota and in neighboring states have that access. If pipeline capacity does not exist, Bakken crude can be transported by rail refineries throughout the United States. In Minnesota, the impact of insufficient pipeline capacity would most likely be greater rail transportation, since most freight railroad routes from North Dakota to the Midwest and the East Coast pass through Minnesota. As Bakken production increases, so would train traffic carrying crude oil through Minnesota.

A further benefit is that Sandpiper will provide redundant service for increased reliability to the existing NDPC deliveries via Line 81 at Clearbrook. Sandpiper will have the ability to deliver an annual capacity of 60,000 bpd into the NDPC Clearbrook Terminal, which will be interconnected with Minnesota Pipe Line's nearby terminal. The volumes delivered into the Minnesota Pipe Line provide feedstock to the two Minnesota refineries. At the completion of the Project there will be two NDPC pipelines (Line 81 and Sandpiper) which could be used to effectuate these deliveries.

The Project will directly benefit the entire Midwest, including Minnesota consumers and manufacturers, by better ensuring secure supplies of crude are available to refineries. The Project also provides additional pipeline take-away capacity to Superior, Wisconsin, where the shippers have connectivity to NDPC's affiliated Enbridge Mainline System. From Superior, shippers have direct or indirect access to premium refinery and marketing hubs serving the Midwest and the East Coast (see Table 7853.0240-C.1).

[18] The two Minnesota refineries comprise 77 percent (77%) of the total crude oil refining capacity in the four-state area. Accordingly, Minnesota provides the bulk of the refined products produced in the District.

D.2. Local Economic Benefits from the Project

The primary purpose and benefit of the Project is to provide an efficient and cost effective transportation solution that links the rapidly rising production regions of the Bakken and Three Forks formations to premium refineries wanting access to secure and reliable sources of crude oil supplies to meet their raw feedstock requirements. However, there are also secondary benefits associated with NDPC's expansion.

Regional refineries that stay competitive contribute to the regional economy. They help maintain a stable employment rate in the communities where facilities are located. Refinery expansions and upgrades also contribute to the regional and local economy through increased temporary and permanent employment, along with increased investments in goods and services.

NDPC also anticipates that the Project will provide temporary beneficial impacts on the local economy during construction. Using the Regional Input-Output Modeling System[19] as developed and maintained by the United States Department of Commerce, Bureau of Economic Analysis, NDPC estimates that approximately 17,315 person-years[20] of temporary construction jobs will be created for the duration of construction. Depending on the availability of local skilled workers, the general pipeline contractor typically draws workers for projects of this type from Minnesota and surrounding states.

The total economic benefit of the Project is estimated at $2.4 billion during construction. Table 7853.0240-D.2-1 summarizes the local economic benefits generated by this Project. Unemployment in the area would be temporarily reduced and payroll taxes would temporarily rise. Local businesses would also benefit from the temporary demand for goods and services generated by the workforce's need for food, lodging and supplies. NDPC expects to locally purchase some of the materials necessary for construction of the Project, including consumables, fuel, equipment, and miscellaneous construction-related materials.

NDPC estimates that the cost of the Project will be approximately $2.6 billion. Based on the anticipated Project cost and current tax schedules, NDPC estimates it could pay as much as approximately $24.9 million in additional annual property taxes in Minnesota beginning in 2016 (estimated taxes are $37.1 million occurring in 2025), subject to assessments by local government units.

Operations are expected to begin in 2016, with the Project yielding another 2,069 person-years of jobs and generating another $450 million in economic impact. Typical operations from 2017 to 2025 are estimated to

[19] http://www.bea.gov/regional/rims/
[20] Person-years is the equivalent of one-person working full-time for one year.

lead to 3,352 full-time-equivalent jobs and create an additional $725 million per year in economic impact.

Pipelines are a very capital-intensive business and NDPC already has a large United States and Midwest-based workforce. However, operation of the Project will likely require NDPC to hire some additional new full-time permanent employees.

Table 7853.0240-D.2-1
Local Economic Benefits Generated from Project

Component	Estimated Total Project Costs [A]	Estimated Tax Benefits [A,B]	No. of Temporary or Permanent Jobs Created	Total Economic Benefits [A]
During construction work of proposed facilities as described in Section 7853.0230	$1.2 B [c]	$8.5 M	17,315 person-years	$2.4 B
During Operation of the Sandpiper Pipeline Project				
2016		$24.9 M	2,069 person-years	$450 M
2017 - 2025		$28.1 - $37.1 M	3,352 person-years	$725 M

[A] M represents "million", B represents "billion".
[B] Tax benefits start in year 2016. Taxes are estimated for each year from 2016 to 2036 and the minimum and maximums for this period are included in the table. The estimated tax benefit could range between the amounts specified.
[C] The total Project Cost in the table is indicative of the Project cost in the State of Minnesota. Total Project cost for the Sandpiper Pipeline Project is $2.6 billion.

E. Other Expansions on the NDPC and Enbridge Systems

E.1. Future NDPC Expansion Plans

NDPC has operated liquid pipelines and related facilities in the states of Montana, North Dakota and Minnesota since 1962. NDPC's experience in managing construction and operation of pipeline systems in a manner that protects the environment and the public's health and safety is demonstrated by its safe and successful expansion and operation of this system over the years.

In the past seven years, NDPC has responded to market demand by expanding its capabilities to export more than seven times the crude oil volumes originally transported in 2005. This approach has provided shippers in the Williston Basin a cost effective and timely transportation solution that links the increasingly prolific petroleum producing Bakken and Three Forks formations to premium refinery and marketing hubs throughout the Midwest and East Coast. NDPC's long-term planning to better serve its shippers' increasing pipeline capacity requirements is an ongoing effort

requiring NDPC to work closely with its shippers and assess various forecasts of production activity.

At this time, NDPC has no other expansion projects being developed other than the Project described herein. Upon completion of this Project, NDPC will have 580,000 bpd of pipeline export capacity, linking the Williston Basin production volumes to premium markets throughout the Midwest and East Coast via NDPC's affiliated Enbridge Mainline System and other interconnecting third-party pipeline companies.

E.2 Future Enbridge Expansion Plans

Since beginning operations in 1950, Enbridge as a whole has expanded the Enbridge Mainline System a number of times to increase transport capability to Minnesota, and across the United States.

Enbridge has a number of expansion projects underway on its mainline system. Details of these projects are on Enbridge's website at www.enbridge.com

F. Summary

The Sandpiper Pipeline Project provides a safe, competitive and timely solution to the critical need for increased transportation capacity out of the Bakken region in response to increased oil production expected over the next twenty years. The Project is driven by the combination of increased oil production from this region in the near future and continually rising demand from refineries in the Midwest and the East Coast for access to secure and reliable sources of domestic crude oil.

The planned 2016 in-service date for the Project meets the industry's needs. It also provides for flexible system expansions in the future that can be implemented in stages, meeting future shipper demands for additional pipeline capacity without the need to install an additional pipeline.

NDPC's Sandpiper Pipeline Project affords shippers access to a wide variety of refinery hubs via NDPC's affiliated Enbridge Mainline System and other third party pipelines at Superior, Wisconsin, creating an integrated crude oil pipeline system extending across North America. These options ensure access to refinery markets in the Midwest and the East Coast. The Project will ultimately provide a reliable, efficient and cost effective system to deliver the large volumes of crude oil needed by the United States Midwestern refiners.

The construction and operation of the Project is in the public interest.

7853.0530 DESCRIPTION OF PROPOSED FACILITY

Subpart 1. Design. The applicant shall provide the following information pertaining to the design of the proposed construction of a large petroleum pipeline:

A. if known, the complete name and address of the engineer and firm to be responsible for the design:

Company Engineering Managers	
Barry Simonson	Greg Schelin
Enbridge Energy, Limited Partnership	Enbridge Energy, Limited Partnership
1409 Hammond Ave., Ste. 200	1409 Hammond Ave., Ste. 200
Superior, WI 54880	Superior, WI 54880

B. the estimated tariffs, capital cost, annual operating and maintenance costs, and economic life;

B.1. Estimated Tariff

As an interstate common-carrier of crude oil and natural gas liquids, the applicable rates, tariffs, and accounting practices for the pipeline are subject to the regulatory authority of the FERC under the Interstate Commerce Act. NDPC plans to file its tariff for the Project approximately 60 days prior to placing the facilities in-service. Additionally, the current NDPC tariffs are available on the FERC website and are also posted on the company web site at http://www.enbridgeus.com/Informational-Postings/North-Dakota/North-Dakota-Tariffs-and-Tolls/ no less than 30 days prior to the pipeline going into service.

B.2. Capital Cost

NDPC estimates the cost of constructing the proposed 24- and 30-inch pipeline to be $2.6 billion, including $1.2 billion in Minnesota.

B.3. Operating and Maintenance Costs

The NDPC System has an established operation and maintenance program and will share other expenses, including labor costs, with Sandpiper. NDPC expects any new operating and maintenance expenses to be vastly less than the operation expenses and cost of additional labor associated with alternatives to the Project, such as rail or truck transportation, as detailed in Section 7853.0540. The cost of the Project,

including operating and maintenance costs, will be recovered through the tariff filed with FERC no less than 30 days prior to the pipeline going into service.

Further, NDPC does not yet have the final cost of the Project, only the estimates disclosed in this Application. The tariff will be filed with the FERC no less than 30 days before the Project is placed into operation. Including a preliminary FERC filing at this time would prejudice NDPC's future filing with the FERC, which has exclusive jurisdiction over the tariff.

B.4. Economic Life

The anticipated economic life for the Sandpiper Pipeline Project will be no less than 30 years.[1]

C. a list of the categories of petroleum products the large pipeline is intended to transport;

Sandpiper is expected to transport Light Sweet Crude Oil.

[1] The economic life of a pipeline or pump station is not the same as the physical life of the facility, which is indefinite with proper construction and maintenance practices.

D. its initial and ultimate design capacities in barrels per day, its diameter, length in Minnesota, maximum number of pumping stations in Minnesota, and nominal station spacing; and

Table 7853.0530-1-D.1
Sandpiper Pipeline Project Capacity Definitions

		24" Pipeline from Berthold, ND Clearbrook, MN (bpd)	30" Pipeline from Clearbrook, MN to Superior, WI (bpd)
Ultimate Capacity	Maximum economic expansion capacity of individual line. Requires additional pumping horsepower over current design to meet this capacity	406,000	711,000
Ultimate Annual Capacity	Maximum economic expansion capacity of individual pipeline that is sustainable average daily rate per day over a year	365,000	640,000
Initial Design Capacity	Theoretical capacity	250,000	417,000
Initial Annual Capacity (90%)	Average sustainable rate: average barrels per day over a year (90% of Design Capacity)	225,000	375,000

Length in Minnesota:

The Project length will be 302 miles in Minnesota.

Maximum number of pumping stations:

NDPC plans to install one new pump station near Clearbrook, Minnesota.

Nominal station spacing:

The distance from the North Dakota/Minnesota border to the Clearbrook Station is approximately 73 miles. The distance from the Clearbrook Station to the Minnesota/Wisconsin border is approximately 229 miles.

E. Engineering data, including the following:

E(1). a pipeline system map showing the route, mileage, location of pumping stations, mainline valves, petroleum storage facilities and interconnections;

As depicted on the route maps (see Exhibit G.5 of the EIR), in Minnesota the preferred route follows the NDPC System from the North Dakota border south of Grand Forks, North Dakota to Clearbrook, Minnesota. The preferred route then turns south and generally follows the existing Minnesota Pipe Line Company right-of-way to Hubbard, Minnesota. From Hubbard, the preferred route turns east, following parts of existing electrical transmission and railroad lines and pipeline rights-of-way, including some greenfield parcels, before terminating in Superior, Wisconsin. The preferred route in Minnesota traverses Polk, Red Lake, Clearwater, Hubbard, Cass, Crow Wing, Aitkin, and Carlton counties.

As stated above, one new pump station will be installed at the new NDPC Clearbrook Terminal near Clearbrook, Minnesota. Station plat maps depicting the location of the new pump station are included in Appendix G.3 of the EIR.

Approximately 15 mainline valves will be installed in Minnesota. The preliminary engineering design complies with industry standards, federal regulations, and the operational needs of the NDPC System. Valves will be near major rivers, other environmentally sensitive areas, population centers, and pumping stations. Proposed valve locations are depicted on the attached route maps (see Appendix G.5 of the EIR). The number and location of the valves may change as a result of a detailed engineering and environmental study currently underway.

In Minnesota, the only interconnection with other pipeline systems will be located at Enbridge's existing Clearbrook Terminal, where the existing NDPC System delivers crude oil into the Minnesota Pipe Line Company System (see Appendix G.3 of the EIR). NDPC's existing Line 81 currently makes crude oil deliveries via this interconnection and Sandpiper will provide redundant service for the Line 81 deliveries. This connection allows crude oil deliveries to Minnesota refineries.

E(2). specifications for pipe (diameter, length, wall thickness, grade) and valves (diameter and American National Standards Institute rating) with the maximum allowable operating pressure for each;

Table 7853.0530-1-E.2-1
Sandpiper Pipeline Project Pipe Specifications

Explanation	ND Border to Clearbrook, MN	Clearbrook, MN to WI Border
Diameter	24-inch outside diameter (NPS 24)	30-inch outside diameter (NPS 30)
Length	73 miles	229 miles
Wall Thickness	0.375 inch	0.469 inch
Coating	Fusion Bond Epoxy	Fusion Bond Epoxy
Specified Minimum Pipe Yield Pressure	1,480 psig	1,480 psig
Grade	X70 Carbon steel pipe manufactured according to American Petroleum Institute (API) Specifications 5L PS2	X70 Carbon steel pipe manufactured according to American Petroleum Institute (API) Specifications 5L PS2

Table 7853.0530-1-E.2-2
Sandpiper Pipeline Project Valve Specifications

Explanation	ND Border to Clearbrook, MN	Clearbrook, MN to WI Border
Diameter	24-inch outside diameter (NPS 24)	30-inch outside diameter (NPS 30)
ANSI Rating	ANSI Class 600	ANSI Class 600

The valves to be installed will be 24-inch and 30-inch ANSI 600, weld end by weld end, full port, rising stem 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 valve will be 1,480 psig.

E(3). for the pumps, representative specifications including diameter, allowable maximum operating pressures, and maximum capacities; and

As stated in Section 7853.0230, NDPC proposes to install new pumping units at the pump station at the new NDPC Clearbrook Terminal near Clearbrook, Minnesota. The specifications of the proposed new unit are provided in Table 7853.0530-1-E.3:

Table 7853.0530-1-E.3
Sandpiper Pipeline Project Pump Station Specifications
Clearbrook Pump Station

Unit	Inlet Diameter (Inches)	Impeller Diameter (Inches)	Pump Maximum Allowable Operating Pressure (psig)	Maximum Annual Capacity (kbpd)	Maximum Power Capacity of Motors (hp)
1	24	28.45	1,480	640	5,500
2	24	28.45	1,480	640	5,500
3	24	28.45	1,480	640	5,500
4	24	28.45	1,480	640	5,500

E(4). for the prime movers, representative specifications including type, allowable maximum power capacity in horsepower, efficiency, allowable maximum and minimum operating temperatures, and energy requirement in Btu per barrel per mile of petroleum product pumped.

The maximum power capacity of the prime movers is shown in Table 7853.0530-1-E.3. All prime movers are 4,160 volt, three-phase electrical motors. The minimum design efficiency of these motors is 96% at 100% load. They are designed to operate (both start and run) at ambient temperatures of 104°F to -49°F. The energy requirement to operate these motors is approximately 13 Btu/barrel/mile. This is based on an annual throughput of 375,000 bpd for the 30-inch pipeline.

Subpart 2. Construction

The applicant shall provide the following information pertaining to the proposed construction of the facility:

A. if known, the complete name and address of the company to be responsible for the construction;

The construction contractor(s) will be determined by competitive bid, considering only qualified mainline pipeline contractors.

B. the proposed date for commencement of construction and the proposed in-service date; and

Construction is anticipated to commence in the fourth quarter of 2014, and to be complete on or before the first quarter of 2016. The proposed in-service date is the first quarter 2016.

C. an estimate of the in-service date if the construction were to be on a fully expedited basis.

If construction were on a fully expedited basis, the estimated in-service date is fourth quarter 2015.

Subpart 3. Operation.

The applicant shall provide the following information pertaining to the operation of the proposed facility:

A. the expected average percentage of use of the full design capacity of the proposed facility during each of the five years of operation;

NDPC expects that the annual capacity will be fully utilized over each of the first five years of operation.

B. the expected maximum operating pressure and capacity of the proposed facility at peak demand;

The maximum annual flow capacity is 225,000 bpd and 375,000 bpd (west and east of Clearbrook, respectively) using a MAOP of approximately 1,480 psig at the Clearbrook pump station. Controls are in place so that the mainline MAOP is not exceeded.

C. the expected power requirement from the prime movers at each station at peak demand (in kilowatts, thousands of cubic feet per hour, or gallons per hour);

One new pump station will be installed at the new NDPC Clearbrook Terminal near Clearbrook, Minnesota. The expected power requirement from the prime movers at this station at peak demand is:

Table 7853.0530-3-C.1
Power Requirement for the Prime Movers

Minnesota Station	Power Requirement (MVA)
Clearbrook	8,950

D. a list of expected sources of supply or shippers of petroleum products for transportation during the first five calendar years of operation, designated either as in-state or as out-of-state, the expected dates and durations of the contracts with the 25 largest suppliers or shippers, the categories of petroleum products and quantities expected to be involved, and for sources of crude oil, the expected geographical areas of origin of the crude oil; and

All of the crude oil that will be transported on Sandpiper originates outside Minnesota. The pipeline will be an open access common-carrier pipeline. Through an open season process, Sandpiper will enter into contracts with shippers for a specified capacity to be transported (or paid for) over a 10-year term. The remaining capacity will be offered on a month-to-month basis and each month shippers will nominate the crude oil volumes they seek to transport. The tolls and tariff will be subject to FERC's approval. The primary geographical source for the light sweet crude oil, referenced in Subpart 1(C) above, is the Williston Basin region of North Dakota.

E. a list of expected recipients of the transported petroleum products during the first five calendar years of operation, designated either as in-state or as out-of-state, the expected dates and durations of the contracts with the 25 largest recipients, and the categories of petroleum products and quantities expected to be involved.

As a common carrier pipeline, the recipients of the crude oil transported by the Project could be any number of directly or indirectly connected refineries shown in Table 7853.0240-C.1 in Section 7843.0240. The product type is described above in 7853.0530 Subpart 1.C. The Project

will have interconnecting facilities at Clearbrook, so a portion of the volume transported can be redirected through the Clearbrook Terminal and into Minnesota Pipe Line facilities as redundant service for NDPC's existing Line 81 to better serve Minnesota refineries. There are no other points of receipt or delivery in the State of Minnesota. Table 7853.0510-1-B.1 provides the historical in-state and out-of-state crude oil deliveries on an annual average basis.

7853.0540 ALTERNATIVES

The applicant shall provide information pertaining to the alternatives that have been considered, and the information shall be presented in the following format:

A. a description of the alternative, including:

(1) a discussion of the design and the geographical area affected;

(2) an estimate of the in-service date;

(3) a discussion of the method of operation;

(4) its costs;

(5) its economic life; and

(6) its reliability; and

NDPC performed an alternative analysis that involved consideration of environmental, engineering and economic factors. The alternatives to the Project that were considered are discussed below. Additional information on these alternatives can be found in Section 2.0 of the EIR.

A. Sandpiper Project

The Sandpiper Pipeline Project is a new 616-mile, 24-inch and 30-inch diameter crude oil pipeline that expands the capacity of the NDPC System. The Project will transport crude oil from NDPC's Beaver Lodge Station, south of Tioga, North Dakota to Clearbrook, Minnesota and then on to an existing NDPC affiliated terminal in Superior, Wisconsin. The Project will provide capacity in a timely manner, as required by the market to meet the transportation capacity requirements of domestic oil producers and the refined product needs of the public served by the refineries that will process the crude oil transported by the Project.

To review reasonable alternatives to building the Project, it is important to review the scope of the Project against which each alternative needs to be compared.

- Ability to Utilize and Follow Existing Pipeline and Utility rights-of-way. Approximately 391 miles of pipeline is located generally along an existing pipeline right-of-way and pre-disturbed rights-of-way across North Dakota, Minnesota, and Wisconsin. Of that total, approximately 227 miles are co-located in Minnesota.
- Five pump stations, booster pumps, and manifold connections in North Dakota and Minnesota. Of these, one is located in Minnesota at the new NDPC Clearbrook Terminal near Clearbrook.

- Integration near Clearbrook, Minnesota for delivery of an annual capacity of 60,000 bpd as redundant service for NDPC's existing Line 81 and receipt of 150,000 bpd from the existing Line 81 for transportation to Superior.
- Ability to interconnect new pipeline facilities at the Superior Terminal with other petroleum pipelines east and south of Superior to maximize potential markets served and flexibility for shippers.

NDPC investigated a number of alternatives, including other pipeline projects under development and alternate transportation modes, before determining that the Project was the most economic and feasible expansion available to provide flexibility and capacity out of the Bakken and into Midwest and East Coast markets.

A.1. No-Action Alternative

The Project objectives would not be met under the No-Action Alternative. In light of the overall increase in Bakken production and the need to increase pipeline capacity, the "no-action" alternative is unacceptable to NDPC and to the petroleum-consuming public, which requires secure and reliable sources. NDPC, its shippers, and residents of Minnesota and neighboring states will be negatively impacted without the capacity expansion afforded by this Project. The "no-action alternative" is not an option as NDPC would not be able to meet its shippers' near-term or future transportation requirements.

A No-Action alternative would require producers and shippers to seek other transportation means that are less safe and more costly than the proposed pipeline or reduce production of petroleum-based products. The only other alternatives for shippers delivering into the NDPC System would be to (1) truck or rail all or portions of the increased Bakken production to refineries outside North Dakota with attendant problems noted below or (2) transport crude oil on non-NDPC pipeline systems that are also at capacity, and thus, would require new pipe or facilities to be constructed.

While the No-Action alternative would avoid environmental impacts on the Project's route because NDPC would not construct the Project, other companies would likely construct similar projects or rail transportation through Minnesota would quickly increase because of the known demand for transportation capacity out of the Bakken formation. These alternative projects could require the construction of additional and/or new pipeline facilities in the same or other locations in order to transport the crude oil volumes proposed for Sandpiper. These projects would generate environmental impacts that would likely be equal to or greater than those described for the Project.

The crude oil produced in the Bakken Formation could continue to be shipped by rail or truck; those alternatives, however, have their own significant environmental impacts as discussed below.

A.2. Plains Bakken North Pipeline Project

A.2.(1) a discussion of the design and the geographical area affected;

On November 3, 2010, Plains All American Pipeline L.P. ("PAA") announced its plans to reverse its Wascana pipeline system and build a new pipeline, Bakken North, to provide additional takeaway capacity for growing Bakken crude production.

The Bakken North pipeline, consisting of approximately 79 miles of new 12-inch diameter pipeline, extends from Trenton, North Dakota to the southern terminus of Plains' Wascana System, located approximately 2.5 miles north of the town of Outlook in Sheridan County, Montana. The new pipeline will have an initial design capacity of 48,000 bpd, with a maximum capacity of up to 75,000 bpd. PAA plans to reverse the flow of its Wascana System in order to provide further transportation service to Regina, Saskatchewan. At Regina, PAA connects to third-party carriers providing access to Cushing, Oklahoma and PADD 2 delivery points.

Public information about the project can be found on its website at http://www.paalp.com. The website also provides links to news releases.

A.2.(2) an estimate of the in-service date;

No in service date is available. North Dakota Public Service Commission filings show construction completed in late 2012. NDPC is not aware if the pipeline has been placed in service as of this date.

A.2.(3) a discussion of the method of operation;

As an interstate common carrier crude oil pipeline, Bakken North will be operated and maintained in accordance with extensive federal and state regulations, specifically 49 C.F.R. Parts 194 and 195 of the PHMSA Rules and Regulations, and any applicable national technical standards.

A.2.(4) its costs;

In the public announcement, PAA estimates the project cost (to the 75,000 bpd capacity) at $160-200 million.

A.2.(5) its economic life; and

Current information is not available to NDPC. Based on the current production forecast from the Bakken region, NDPC estimates the project life would be approximately 30 years.[1]

A.2.(6) its reliability.

NDPC assumes that the new pipeline will be constructed, operated and maintained in accordance with all applicable federal/state rules and regulations and industry standards as an interstate common carrier crude oil pipeline.

A.3. High Prairie Pipeline Project

A.3.(1) a discussion of the design and the geographical area affected;

The proposed High Prairie Pipeline Project would consist of approximately 450 miles of new 16-inch diameter pipeline, beginning north of Alexander, North Dakota in McKenzie County and ending near Clearbrook, Minnesota in Clearwater County. High Prairie is also proposing to construct two laterals: a 17-mile lateral originating at Johnsons Corner, North Dakota in McKenzie County and connecting with the High Prairie Pipeline, and an 8-mile lateral beginning near Robinson Lake, North Dakota in Mountrail County and connecting with the High Prairie Pipeline. The new pipeline will have an initial design capacity of 150,000 bpd and end at Clearbrook, Minnesota. Public information about the project can be found on its website at http://www.sbpipeline.com. The website also provides links to news releases.

A.3.(2) an estimate of the in-service date;

The anticipated in-service date is the fourth quarter of 2013; however, NDPC is not aware that construction has commenced as of this date.

A.3.(3) a discussion of the method of operation;

As an interstate common carrier crude oil pipeline, High Prairie will be operated and maintained in accordance with extensive federal and state regulations, specifically 49 C.F.R. Parts 194 and 195 of the PHMSA Rules and Regulations, and any applicable national technical standards.

[1] The economic life of a pipeline or pump station is not the same as the physical life of the facility, which is indefinite with proper construction and maintenance practices.

A.3.(4) its costs;

The estimated cost is $650 million.

A.3.(5) its economic life; and

Current information is not available to NDPC. Based on current production forecast from the Bakken region, NDPC estimates the project life would be approximately 30 years.

A.3.(6) its reliability.

NDPC assumes that the new pipeline will be constructed, operated and maintained in accordance with all applicable federal/state rules and regulations and industry standards as an interstate common carrier crude oil pipeline.

A.4. Koch Pipeline Company Dakota Express Pipeline

A.4.(1) a discussion of the design and the geographical area affected;

The Dakota Express Pipeline ("Dakota Express") was a proposed pipeline project with a capacity of 250,000 bpd. The proposed pipeline would have transported Bakken crude oil from western North Dakota to Hartford, Illinois and Patoka, Illinois. In January 2014, however, Koch Pipeline Company announced that this project will not move forward.[2] Accordingly, it is no longer considered an alternative pipeline system.

A.5. Trucking Alternative

There is insufficient truck capacity to transport the total annual capacity of 375,000 barrels of crude oil per day that would be moved by the Project. A trucking alternative would significantly overburden current public road capacity. Even if the truck capacity issue could be resolved, NDPC or its shippers would need to expand truck loading/unloading facilities in North Dakota, Minnesota, and Wisconsin. While trucks are a vital part of the crude oil gathering and distribution network, pipelines are a safer and more economical alternative for transporting this volume of crude oil for these distances. The potential in-service date of additional trucking, road and loading/unloading capacity is not known. The reliability of this alternative in northern climates is compromised by periodic restrictions on truck traffic due to winter storms, spring road restrictions, other weather conditions or road weight capacity restrictions.

[2] http://www.bloomberg.com/news/2014-01-22/koch-ends-plans-for-pipeline-to-illinois-from-bakken.html

A.5.(1) a discussion of the design and the geographical area affected;

For the purpose of this analysis, NDPC assumes that a trucking company will optimize the use of its trucking fleet to transport the same crude oil volumes as this Project. NDPC further assumes that the trucking company will divide its transportation requirements into three individual truck hauls that will make round-trips between specified locations: two beginning at the Beaver Lodge Station near Tioga, North Dakota and ending at Berthold, North Dakota or Superior, Wisconsin and a third that begins at Clearbrook, Minnesota and ends at Superior. To achieve maximum optimization of its trucking operations, NDPC also assumes that a fleet of trucks would be scheduled to run round-trip deliveries between the following three locations:

- Leaving Beaver Lodge Station near Tioga, North Dakota to deliver 25,000 bpd at Berthold, North Dakota; returning empty from Berthold back to Beaver Lodge;
- Leaving Beaver Lodge to deliver 225,000 bpd at Superior, Wisconsin; returning empty from Superior back to Beaver Lodge; and
- Leaving Clearbrook, Minnesota to deliver up to 150,000 bpd at Superior Wisconsin; returning empty from Superior back to Clearbrook.

In order to transport the same incremental 25,000 bpd of crude oil from Beaver Lodge to Berthold, 225,000 bpd from Beaver Lodge to Superior, and 150,000 bpd from Clearbrook to Superior as proposed by NDPC, a fleet of 4,354 trucks would be required as detailed below:

<u>Computation of Trucking Requirements (Beaver Lodge, ND to Berthold, ND):</u>
Crude oil volumes = 25,000 bpd
Per Truck capacity = 200 barrels per truck
Number of trucks required = 25,000 / 200 = 125 trucks per day
Assume each truck requires loading, in-transit full (0.25 day), in-transit empty (0.25 days) and unloading time
Number of trucks in transit = 125 X 0.25 day = 32 trucks
Number of trucks returning empty = 125 x 0.25 = 32trucks
20% of the in-transit trucks loading and unloading = 13 trucks
Total truck requirements = 32+32+13 = 77 trucks
(ignoring scheduled/unscheduled down time)

Computation of Trucking Requirements (Beaver Lodge, ND to Superior, WI):
Crude oil volumes = 225,000 bpd
Per Truck capacity = 200 barrels per truck
Number of trucks required = 225,000 / 200 = 1,125 trucks per day
Assume each truck requires loading, in-transit full (1.25 days), in-transit empty (1.25 days) and unloading time
Number of trucks in transit = 1,125 X 1.25 days = 1,407 trucks
Number of trucks returning empty = 1,125 x 1.25 = 1,407 trucks
20% of the in-transit trucks loading and unloading = 563 trucks
Total truck requirements = 1,407 +1,407 +563 = 3,377 trucks
(ignoring scheduled/unscheduled down time)

Computation of Trucking Requirements (Clearbrook, MN to Superior, WI):
Crude oil volumes = 150,000 bpd
Per Truck capacity = 200 barrels per truck
Number of trucks required = 150,000 / 200 = 750 trucks per day
Assume each truck requires loading, in-transit full (0.5 days), in-transit empty (0.5 days) and unloading time
Number of trucks in transit = 750 X 0.5 days = 375 trucks
Number of trucks returning empty = 750 x 0.5 = 375 trucks
20% of the in-transit trucks loading and unloading = 150 trucks
Total truck requirements = 375+375+150 = 900 trucks
(ignoring scheduled/unscheduled down time)

In order to facilitate this alternative, significant truck loading and offloading terminal facilities would have to be constructed at Beaver Lodge, North Dakota; Berthold, North Dakota; Clearbrook, Minnesota; and Superior, Wisconsin. In addition, it is likely that substantial upgrades and ongoing maintenance would be required (at public expense) to the connecting roadways along the entire route.

A.5.(2) an estimate of the in-service date;

While it is possible that the terminal facilities could be constructed on the same timeline as the Project, NDPC does not have an estimate of the time that would be required to acquire the trucking fleet described above, how long it would take to recruit and train the associated drivers, nor how extensive the roadway upgrade program would be.

A.5.(3) a discussion of the method of operation;

This operation would be highly labor intensive, with a significant workforce required at all terminal locations to meet the constant loading and offloading requirements. This option would require a significant driver pool to maintain the constant movement of the entire truck fleet.

A.5.(4) its costs;

NDPC is not aware of any trucking operation capable of transporting on a scale equivalent to this Project that could provide cost comparisons. However, the trucking costs for this alternative could be anticipated to be in the hundreds of millions of dollars per year range (ignoring the costs of maintaining and replacing vehicles over the economic life of the project, fuel, additional overhead costs such as general administration, and necessary public and private infrastructure).

For example, the base capital investment needed to order a fleet of 4,354 trucks for transporting 375,000 bpd of crude oil is estimated to be $870,800,000, assuming each trucking rig would cost approximately $200,000. Annual wages are estimated to be approximately $384,588,820 which assumes 4,354 drivers are on the road 365 days per year at the rate of $242 per day per driver. This means the initial capital investment for the first year of operation would be $1,255,388,820 for just the fleet of trucks and its drivers. Additionally, the $870,800,000 cost of the 4,354 trucks will be accrued at least 5 more times over the life of the project, assuming the economic life of the truck will not exceed 5 years as discussed in A.5.(5).

A.5.(5) its economic life; and

With mileage that the trucks would incur in steady service, NDPC estimates that the economic life of a truck would not exceed 4 to 5 years. The truck loading and unloading terminals would have an estimated economic life of 30 years. NDPC does not have an assessment of the impact that this amount of incremental truck traffic would have on the various roadways.

A.5.(6) its reliability.

This operation would be inherently much less reliable than Sandpiper as truck traffic is affected by weather conditions, mechanical failure, manpower (driver shortages), and road maintenance or closures. According to the NTSB, trucks have a significantly higher rate of accidents affecting driver and public safety than pipelines.

Trucking cannot compete with pipelines for volumes over long distances given physical limitations on trucks, roads, and the loading/unloading facilities that are required to sustain operations of this scale. As discussed in 7853.0250, truck hazmat incidents occur more frequently than pipeline accidents.

A.6. Rail Alternative

Sufficient rail tanker car capacity does not exist to transport the incremental annual capacity to be provided by the Project. This alternative would require the construction (by NDPC or its shippers) of rail car loading and off-loading facilities. Construction of new lateral aboveground rail service lines would be required and would pose additional risk and impacts to landowners and the public. While rail tanker cars are a vital part of the short-haul distribution network for crude oil, pipelines are a safer and more economic transportation alternative. The potential in-service date of additional truck-to-rail, rail tanker car, rail line, and off-loading capacity is not known. The reliability of this alternative in northern climates is compromised by periodic restriction in truck traffic required to deliver crude oil to rail facilities due to winter storms and spring road restrictions or other weather related or road capacity restrictions.

A.6.(1) a discussion of the design and the geographical area affected;

For the purpose of this analysis, NDPC assumes rail transportation providers will optimize the use of their rail tank cars to transport the same crude oil volumes as the Project. NDPC also assumes that the rail service provider will use long-haul unit or manifest trains with deliveries at intermediate stops between Beaver Lodge Station and Superior, Wisconsin. NDPC also assumes that the numerous manifest or unit trains would be required to make the following deliveries equivalent to this Project:

- Leaving Beaver Lodge Station near Tioga, North Dakota with a rail fleet capacity of 250,000 bpd, and the ability to offload deliveries of 25,000 bpd of crude oil supplies at Berthold, North Dakota; no guarantee that empty rail tank cars would return to Beaver Lodge for reloading;
- Leaving Berthold with a rail fleet capacity of 225,000 bpd and the ability to offload entire capacity of rail fleet at Superior, Wisconsin; no guarantee that empty rail fleet would return to Beaver Lodge for reloading; and
- Leaving Clearbrook, Minnesota with a rail fleet capacity up to 150,000 bpd, and the ability to offload entire capacity of rail fleet at Superior, Wisconsin; no guarantee that empty rail fleet would return to Clearbrook for reloading.

In order to transport the same incremental 25,000 bpd of crude oil from Beaver Lodge to Berthold, 225,000 bpd from Beaver Lodge to Superior, and up to 150,000 bpd from Clearbrook to Superior as proposed by NDPC, a fleet of rail 2,052 cars would be required as detailed below:

Computation of Railcar Requirements (Beaver Lodge, ND to Berthold, ND)
Crude oil volumes = 25,000 bpd
Rail car capacity = 600 barrels per rail car
Tank cars required = 25,000/600 = 42 rail cars per day
Estimated time to move each rail car from Beaver Lodge to Berthold (various carriers and through various rail assembly yards) = 1 day
Number of cars in transit = 42 X 1 day = 42
Number of cars returning empty = 42 x 1 = 42
20% of the in-transit cars loading and unloading = 17 cars
Total tank car requirements = 42+42+17=101 cars

Computation of Railcar Requirements (Berthold, ND to Clearbrook, MN)
Crude oil volumes = 225,000 bpd
Rail car capacity = 600 barrels per rail car
Tank cars required = 225,000/600 = 375 rail cars per day
Estimated time to move each rail car from Beaver Lodge to Berthold (various carriers and through various rail assembly yards) = 1.5 days
Number of cars in transit = 375 X 1.5 days = 563
Number of cars returning empty = 375 x 1.5= 563
20% of the in-transit cars loading and unloading = 225 cars
Total tank car requirements = 563+563+225=1,351 cars

Computation of Railcar Requirements (Clearbrook, MN to Superior, WI)
Crude oil volumes = 150,000 bpd
Rail car capacity = 600 barrels per rail car
Tank cars required = 150,000/600 = 250 rail cars per day
Estimated time to move each rail car from Beaver Lodge to Berthold (various carriers and through various rail assembly yards) = 1 days
Number of cars in transit = 250 X 1 days = 250
Number of cars returning empty = 250 x 1 = 250
20% of the in-transit cars loading and unloading = 100 cars
Total tank car requirements = 250+250+100=600 cars

Approximately 1,710 rail cars (this includes both full and empty railcars in transit and excludes the 20% loading/unloading) would have to be in route each day, making the roundtrip between Beaver Lodge, North Dakota; Berthold, North Dakota; Clearbrook, Minnesota; and Superior, Wisconsin. In order to facilitate this operation, significant spur lines, rail sidings, and terminal facilities would have to be constructed at Beaver Lodge, North Dakota; Berthold, North Dakota; Clearbrook, Minnesota; and Superior, Wisconsin. In addition, substantial upgrades and ongoing maintenance would be required to the connecting railways.

A.6.(2) an estimate of the in-service date;

More recently, rail deliveries have become more significant due to lack of pipeline capacity to move production to market or the ability for rail to reach market centers that provide a higher net back to producers. For the U.S. as a whole, crude oil deliveries by rail comprised 0.6% of the total deliveries in 2012, which is up five-fold from the 2011 rail deliveries. The current demand for crude-by-rail transportation has resulted in the tank car construction industry being at 100% capacity. Crude shipments by rail are continuing to increase, creating a shortage of supply of new tank cars. According to data from the Freight Transportation Research Associates, available through the Bloomberg service, tank car manufacturers have a backlog of roughly 47,000 tank car orders. The timeline to process an order and receive delivery of such tank cars is now estimated at 15-18 months.[3] Therefore, NDPC concluded that the timeline necessary to manufacture 2,052 new tank cars makes the crude-by-rail alternative no longer a viable option, since it would far exceed the in-service date for this Project. Finally, NDPC does not have an estimate of the time required to construct the necessary upgrades associated with the railway infrastructure

A.6.(3) a discussion of the method of operation;

This operation would be highly labor intensive, with a significant workforce required at both terminal locations to allow for the constant loading and offloading requirements and railcar operation.

A.6.(4) its costs;

NDPC is not aware of any rail operation on the same scale of this Project that could provide guidance on estimating the capital costs required for rail service of this magnitude. NDPC also is unsure if rail carriers have or would provide a joint rail tariff(s) for the service contemplated. The rail costs for this alternative could be anticipated to be in the hundreds of millions of dollars per year (without considering the costs of new rolling stock and infrastructure facilities necessary). For example, the base capital investment needed to order a fleet of 2,052 tank cars is estimated to be $285,228,000. This estimate is based on the latest specific new-build prices that range from $139,000 to $143,000 for a 25,500 gallon/600 barrel coiled/insulted tank car.[4] Therefore, an initial capital investment of $285.2 million would be needed to move 375,000 bpd by rail. This cost estimate does not include new rail infrastructure, railway maintenance, labor costs, fuel, or other associated expenses.

[3] http://wire.kapitall.com/investment-idea/tank-car-manufacturers-to-benefit-from-crude-by-rail.
[4] http://www.rbnenergy.com/i-can-see-for-miles-and-miles-and-miles-and-miles-tank-cars, Page 2.

A.6.(5) its economic life; and

With mileage that the cars would incur in steady service, NDPC estimates that the economic life of a rail car would not exceed 10 to 15 years. The rail loading and unloading terminals would have an estimated economic life of 30 years.

A.6.(6) its reliability.

This operation would be inherently much less reliable than Sandpiper. The entire operation would be subject to weather related delays, delays caused by scheduling conflicting rail traffic, and a significant mechanical/maintenance requirement based on the number of rail cars involved in this operation.

The transportation of crude oil by rail has increased due to the urgent need for additional pipeline infrastructure and transportation capacity. However, NDPC's transportation cost analysis indicates that pipeline transport is roughly 60% of the cost of rail transport. Additionally, rail accidents result in fires and/or explosions about 2 times more frequently per barrel of oil transported per mile.[5]

B. a summary of the conclusions reached with respect to the alternative and the reason for its rejection.

Based on the forecast of demand and supply for crude oil discussed in Section 7853.0240, NDPC has determined, and shippers have supported, the need to construct the Sandpiper Pipeline Project to meet the increasing demand for additional pipeline capacity from the Williston Basin region.

NDPC evaluated the various alternative transportation options which are limited to rail, truck and pipelines. Based on factors considered for each alternative, it was determined that:

- "No-Action" Alternative: Not acceptable to NDPC and its shippers because additional pipeline capacity is needed to meet shippers' current and future transportation requirements in a timely, safe, and economical manner.
- Alternate Pipeline Systems: Based on the supporting forecast studies discussed in Section 7853.0540 of this Application, NDPC determined that Sandpiper and other potential pipeline projects are not competing for the same production volumes, and are needed to meet the market demand for additional pipeline export capacity. New and increasing production volumes will be apportioned if additional pipeline capacity is

[5] Source: *Allegro Energy Group as posted on the Association of Oil Pipelines website,* comparison was based on calculated rates per ton-mile.

not available, or shippers would seek other modes of transportation to market. These other methods, such as truck or rail, are more costly to producers, based on the current pricing at key marketing hubs, and are less reliable with increased safety risks.

Pipelines still remain the safest and most cost-effective modes of transporting crude oil to market. According to EIA data, over the last 10 years, pipelines have made 99.4% of the total crude oil deliveries to PADD 2 refineries. In 2012, pipelines delivered 98.5% of the total crude oil processed by PADD 2 refineries.

- Truck and Rail: Alternative modes of transportation, such as trucking and rail options are cost-prohibitive and impose higher public safety and environmental costs than the Project.

NDPC concluded that this Project provides a cost effective and efficient system that will:

- provide a long-term transportation solution for moving Bakken and Three Forks production to Midwest and East Coast refineries and marketing hubs;
- increase the pipeline capacity of the NDPC System from Beaver Lodge, North Dakota to Superior, Wisconsin to meet the current and future transportation requirements of NDPC's shippers;
- provide redundant capacity for deliveries from the existing Line 81 at Clearbrook, Minnesota;
- help reduce the current reliance on long haul truck deliveries and rail transportation options; and
- help reduce the transportation costs borne by Williston Basin producers who currently must resort to non-pipeline transport options, allowing their savings to be immediately re-directed towards further development of oil and gas resources.

As proposed, this Project minimizes environmental impacts to the extent possible and, when integrated with the existing NDPC System, provides the safest, most efficient and cost-effective alternative to bridge the gap between the growing demand for crude oil supplies in the Midwest and East Coast and the increased and reliable domestic supplies from North Dakota. Thus, all other alternatives discussed herein were rejected.

NDPC next evaluated route alternatives, a discussion of which is included in Section 2.0 of the EIR.

7853.0600 INFORMATION REQUIRED

Each applicant shall provide environmental data for the proposed facility and for each alternative discussed in response to part 7853.0540, to the extent that such data is reasonably available. Environmental data for each pipeline considered shall conform to the format given in parts 7853.0600 to 7853.0640. Information for each of the other types of alternatives considered shall include:

A. a list of the natural and cultural resources, as given in part 7853.0610, subpart 2, items G to K, that would be directly impacted; and

General information reasonably available for direct impacts to natural and cultural resources from the alternatives discussed in Section 7853.0540 is provided below.

A.1. No-Action Alternative

The no-action alternative would have no environmental impact along the Project's route. This alternative, however, will not meet the needs of NDPC's shippers and will not meet the public demand for safe and economical increased, secure supplies of crude oil to be refined into products in high demand. It also is likely that another pipeline company would develop a similar project because of the established demand for transportation capacity out of the Bakken formation. These other projects would likely have similar or greater environmental impacts than those resulting from Sandpiper.

A.2. Alternate Pipeline Projects

A.2.1. Plains Bakken North Pipeline Project

Detailed route maps of the Plains Bakken North Pipeline are not publicly available for the entire project at this time. Route maps for the North Dakota portion of the project are available through the North Dakota Public Service Commission. Because the entire project route is not available, NDPC is not able to completely quantify the natural and cultural resources that would be directly impacted. It is highly likely that the Plains Bakken North Pipeline would cross: lakes, streams and wetlands; transportation routes; and state-owned or -managed lands and resources. It also is possible that the pipeline would cross resources of national interest.

A.2.2. High Prairie Pipeline Project

Detailed route maps of the proposed High Prairie Pipeline Project are not publicly available at this time. Therefore, NDPC is not able to quantify the natural and cultural resources that would be directly impacted. Based on publicly available documents, the High Prairie Pipeline would likely impact the same resources as the Project between the North Dakota border and Clearbrook, Minnesota.

A.2.3. Koch Pipeline Company Dakota Express Pipeline

In January 2014, Koch Pipeline Company announced that this project will not move forward. Accordingly, it is no longer considered an alternative pipeline system.

A.3. Trucking Alternative

Table 7853.0600-A.3 lists the number of trucks that would be needed to transport the same incremental 25,000 bpd of crude oil from Beaver Lodge to Berthold, 225,000 bpd from Beaver Lodge to Superior, and 150,000 bpd from Clearbrook to Superior as proposed by NDPC.

Table 7853.0600-A.3
Total Truck Requirements

	Crude oil volume (bpd)	Number trucks in transit	Number trucks returning empty	Number trucks loading and unloading	Total truck requirements
Beaver Lodge, ND to Berthold, ND	25,000	32	32	13	77
Beaver Lodge, ND to Superior, WI	225,000	1,407	1,407	563	3,377
Clearbrook, MN to Superior, WI	150,000	375	375	150	900
				TOTAL	4,354

As discussed in Section 7853.0540, moving the volumes of crude oil proposed by the Project could place an additional 3,628 trucks and trailers (this includes both full and empty trucks and trailers in transit

and excludes the 20% loading/unloading) on the roads of North Dakota, Minnesota and Wisconsin around the clock, every day of the year. The environmental impacts of this alternative would include fugitive emissions from thousands of semi-tractors in constant operation. In addition, the vastly increased vehicle traffic on roads would be extremely disruptive to the populace and wildlife of the region. Finally, new unloading facilities would be required at the Superior Terminal.

NDPC cannot describe the natural and cultural features that would be impacted by this alternative because of the varying routes that trucks could travel between Beaver Lodge, North Dakota and Superior, Wisconsin. Additional information is not immediately available.

A.4. Rail Alternative

Moving the same volume of crude oil by rail could require the construction of a new railroad link in Minnesota, including loading/unloading facilities in North Dakota, Minnesota, and Wisconsin and rail car unloading facilities in Minnesota or Wisconsin. A rail alternative in Minnesota that meets the same objectives as the Project would, at a minimum, require full rail transportation from western Minnesota to eastern Minnesota, new rail facilities at Clearbrook, and possibly requiring new or improved rail lines.

Table 7853.0600-A.4 lists the number of rail cars that would be needed to transport the same incremental 25,000 bpd of crude oil from Beaver Lodge to Berthold, 225,000 bpd from Beaver Lodge to Superior, and 150,000 bpd from Clearbrook to Superior as proposed by NDPC.

If loading or unloading were to occur in Minnesota, the construction necessary for such loading and unloading facilities would require new land acquisition. The construction process would have environmental impacts, as would the constant flow of rail cars once the railroad link was placed into operation. At any one time, 1,710 (this includes both full and empty railcars in transit and excludes the 20% loading/unloading) rail cars transporting crude oil could be in transit through North Dakota, Minnesota, and Wisconsin (see Table 7853.0600-A.4). Environmental impacts of this alternative would likely include habitat and wetland loss during the construction of the rail link and the fugitive emissions from constant train engine operation.

Table 7853.0600-A.4
Total Rail Requirements

	Crude oil volume (bpd)	Number rail cars in transit	Number rail cars returning empty	Number rails cars loading and unloading	Total rail car requirements
Beaver Lodge, ND to Berthold, ND	25,000	42	42	17	101
Beaver Lodge, ND to Superior, WI	225,000	563	563	225	1,351
Clearbrook, MN to Superior, WI	150,000	250	250	100	600
				TOTAL	2,052

Impacts to natural and cultural features cannot be described because NDPC has not identified a feasible rail route through Minnesota, or preferred loading and unloading options. Acquiring this information would be unreasonable under the current circumstances.

It is also possible that this rail traffic would follow other, existing routes through Minnesota if the shippers do not choose to utilize the Enbridge mainline system at Superior, Wisconsin.

B. a discussion of those applicable areas of environmental concern that are detailed in parts 7853.0620 to 7853.0640.

Environmental data for the Project is provided in Sections 7853.0620 to 7853.0640.

Some detailed environmental information regarding the alternatives analyzed in Section 7853.0540 of this application is not reasonably available to NDPC due to the scope of the alternatives. However, what information is available is presented in the following subsections.

B.1. No-Action Alternative

The no-action alternative would not create any environmental impacts. This alternative, however, will not meet the needs of NDPC's shippers and will not meet public demand for increased, secure supplies of crude oil. It also is likely that another pipeline company would develop a project because of the known demand for transportation capacity out of the Bakken formation. These other projects would likely have similar or greater socioeconomic and environmental impacts than those resulting from Sandpiper.

B.2. Alternate Pipeline Projects

For all environmental impacts presented below, impacts of the Bakken North Pipeline, High Prairie Pipeline, and Dakota Express Pipeline would be similar in nature to those of Sandpiper, as they are all linear pipeline projects. Please see Sections 7853.0620, 7853.0630, and 7853.0640 of this Application for additional discussion of the environmental data presented for the proposed Project. However, because the specific location of the Alternate Pipeline Projects is not known definitively, NDPC cannot assess or conduct a comparative analysis of the environmental impacts.

B.2.a. Wastewater, Air Emissions and Noise Sources

Point Discharges to Water

The Alternate Pipeline Projects would create point discharges to water for trench dewatering and hydrostatic test discharges, similar to Sandpiper. Discharges also may result from releases. Because there is not publicly-available information on the Alternate Pipeline Projects, NDPC cannot quantify the location or amount of such discharges. It is likely that Alternate Pipeline Projects would prepare documents to specify steps to control discharges. In addition, the Alternate Pipeline Projects would likely develop release plans to identify the precautions and measures to be taken in the event of a release. The Alternate Pipeline Projects would be required to obtain state and potentially federal permits related to water discharges.

Area Runoff

Construction stormwater runoff would occur as a result of the Alternate Pipeline Projects and would be received by waterbodies along their respective routes, similar to Sandpiper. The Alternate Pipeline Projects would likely implement necessary erosion control measures

during and after construction, where appropriate, to minimize erosion and sedimentation, as well as surface runoff from the facility. The Alternate Pipeline Projects would be required to obtain state and potentially federal permits related to stormwater management.

Point Sources of Airborne Emissions

Construction of the Alternate Pipeline Projects and associated facilities would result in intermittent and short-term fugitive emissions similar to Sandpiper. These emissions would include dust from soil disruption and combustion emissions from the construction equipment. The fugitive dust emissions would depend on the moisture content and texture of the soils that would be disturbed. In addition, associated facilities (i.e., terminals and pump stations) may be subject to state air permitting requirements found in Minnesota Administrative Rules Chapter 7007. New facilities may contribute to an increase in emissions, similar to the proposed Project.

Noise

The heavy equipment needed to construct the Alternate Pipeline Projects would have a short-term impact on noise levels in the vicinity of the construction right-of-way. Typical pipeline construction equipment (e.g., bulldozers, loaders, backhoes and sideboom tractors) generate between 80 to 90 decibels within 50 feet of the equipment. Noise would not be generated along the pipeline right-of-way during normal operation; however, new terminals or pump stations associated with the project would result in additional noise in the immediate vicinity of the facility.

B.2.b. Pollution Control and Safeguards Equipment

Air Pollution Controls

Construction of the Alternate Pipeline Projects and associated facilities would result in intermittent and short-term fugitive emissions. These emissions would include dust from soil disruption and combustion emissions from the construction equipment. Emissions from the gasoline and diesel engines would be minimized because the engines must be built to meet the standards for mobile sources established by the Environmental Protection Agency (“EPA”) mobile source emission regulations. It is likely that the Alternate Pipeline Projects would implement control measures to minimize these emissions, similar to Sandpiper.

Water Pollution Controls

The Alternate Pipeline Projects would likely develop standardized erosion control and restoration measures to minimize and mitigate potentially adverse environmental effects resulting from right-of-way preparation, construction, operation, and maintenance of the respective projects. The Alternate Pipeline Projects also would likely comply with applicable federal, state, and local rules and regulations and take appropriate precautions to protect against pollution of the environment. In addition, the Alternate Pipeline Projects would likely retain their own Environmental Inspectors (along with third-party Environmental Inspectors reporting to federal and/or state regulatory agencies) to verify that environmental protection measures, environmental permit conditions, and other environmental specifications are implemented appropriately by the contractor during construction.

Oil Release, Fire, and Explosion Safeguards

The Alternate Pipeline Projects would likely develop standardized emergency response measures to prevent and plan response for oil releases, fires, or explosions related to operation of the respective projects. The pipelines would be subject to similar federal and state oversight as the proposed Project, and the Project sponsors would require their workers and contractors to be trained in appropriate recognition and response techniques.

Other Safeguards and Controls

NDPC is not aware of any other safeguards and controls that would be implemented by the Alternate Pipeline Projects because other safeguards and controls (in addition to those listed above) are company-specific.

B.2.c. Induced Developments

Utility Use

Because detailed information about the Alternate Pipeline Projects is not available, NDPC is not aware if operation of the pipelines and associated facilities would require new utilities or additional electric utility infrastructure.

Water Use

It is likely that the Alternate Pipeline Projects would require hydrostatic testing of the new pipelines and any associated tankage to verify integrity prior to placing the facilities in service. The Alternate Pipeline

Projects would be required to obtain state and potentially federal permits for water appropriation and discharge.

Vehicular Traffic

Similar to the proposed Project, short-term impacts on local transportation systems would result from construction of the Alternate Pipeline Projects across roads and railroads; movement of construction equipment and material to work areas; and daily commuting of the construction workforce to work sites. Some increased traffic would likely occur in localized areas for operational activities, but these instances would likely be infrequent and of short duration.

Agriculture

It is highly likely that the Alternate Pipeline Projects would cross agricultural land, including cultivated and pasture land. The pipelines would require excavation in agricultural lands and would likely cross farms and drainage ditches.

Construction activities would likely temporarily utilize active cropland within construction work areas. Construction activities also would interfere with center-pivot irrigation systems, planting or harvesting, depending on the construction season. Agricultural land in the construction right-of-way would generally be taken out of production for one growing season and would be restored to previous uses following construction. Landowners likely would be compensated for crop losses and other damages caused by construction activities.

Relocation of Persons

Because detailed information about the Alternate Pipeline Projects is not available, NDPC is not aware if the pipeline and associated facilities would result in relocation of persons. However, since construction and operation of the pipeline would likely require acquisition of additional property, the projects could result in the relocation of persons.

B.3. Trucking Alternative

Please see Section 7853.0540, part A.5 of this Application for additional discussion of the trucking alternative.

B.3.a. Wastewater, Air Emissions and Noise Sources

Point Discharges to Water

The trucking system alternative would create point discharges to water at the loading and unloading facilities. Discharges would come from washing vehicles and tank trailers, and may result from releases caused by accidents. NDPC cannot quantify the location or amount of such discharges. NDPC would prepare an Environmental Protection Plan that would specify steps to ensure correct handling of site stormwater. In addition, a Spill Prevention Plan would be developed to identify the precautions and measures to be taken in the event of a release.

Area Runoff

Area runoff adjacent to the expanded and/or new loading/unloading facilities would increase as a result of the Trucking Alternative. Truck loading/unloading sites have not been identified. If facilities were located in Minnesota at or near Sandpiper facilities, runoff could impact those waters identified in Section 7853.0610 Subpart 2(G), as well as waters adjacent to facilities requiring expansion. NDPC would implement necessary erosion control measures during and after construction, where appropriate, to minimize erosion and sedimentation as well as surface runoff from the facility. In addition, if NDPC were to operate a trucking facility, it would develop the necessary Emergency Response Plan for the facility and incorporate the facility into its ongoing operations practices and emergency response planning.

Area runoff would be expected from roadway treatment with sand and anti-ice chemicals. NDPC is unable to quantify the discharge from such road treatments by state and local governments.

Point Sources of Airborne Emissions

The trucks themselves would be the largest source of airborne emissions for the trucking alternative.

The trucks required to transport the crude oil would consume millions of gallons of fuel per year, with subsequent exhaust emissions as shown in Table 7853.0600-B.3 below.

Table 7853.0600-B.3
Trucking Alternative Airborne Emissions

Emission Source Description	Pollutant Emissions (tpy)						
	NO_X	CO	SO_2	HC	PM_{10}	$PM_{2.5}$	GHG (CO_2e)
On-road vehicle diesel combustion emissions	4,130	6,573	11	1,336	73	69	1,101,880
Particulate matter emissions from paved roads	-	-	-	-	22,246	5,460	-
Total	4,130	6,573	11	1,336	22,320	5,529	1,101,880

- Emissions are calculated based on 577,247,500 vehicle miles traveled per year.
- Transport of crude oil in trucks will result in diesel engine emissions and particulate matter from the trucks driving on paved roads.
- Truck emissions are calculated based on vehicle miles driven and EPA emission factors.
- The trucking emission only quantifies emissions from truck operation to Superior, WI. Emissions from truck idling and emissions from the loading of crude oil into the transport trucks have not been included.
- This transportation method would require the construction of truck loading/unloading facilities in Tioga and Berthold, ND and truck unloading facilities in Clearbrook, MN and Superior, WI.

Noise

The Trucking Alternative would contribute to noise levels from traffic on local and Minnesota highways as approximately 3,628 trucks would be in transit per day. Tractor trailer rigs would be required to meet all federal and state noise abatement requirements for operation on public roadways.

Noise levels for construction related to the expansion of truck loading/unloading facilities would be similar to those described for the proposed Project in Section 7853.0620 Subpart 4.

B.3.b. Pollution Control and Safeguards Equipment

Air Pollution Controls

Equipment installed on the trucks themselves would be the primary means of air pollution control for the trucking alternative. Every truck used would be subject to the air emissions standards under applicable EPA and Department of Transportation regulations.

Air pollution controls for construction related to the expansion of the facilities would be similar to those described for the proposed Project in Section 7853.0630 Subpart 1.

The trucks required to transport the crude oil would consume millions of gallons of fuel per year, with subsequent exhaust emissions. Despite the standards established by the EPA mobile source emission regulations (Title 40 C.F.R. Part 85) and the maximum sulfur content of diesel fuel for highway vehicles reduction, the Trucking Alternative would increase air pollution levels. Dust control measures would not be necessary for the Trucking Alternative as paved highways would be the primary transportation route.

Water Pollution Controls

Water pollution controls for construction related to the expansion of the facilities would be similar to those described for the proposed Project in Section 7853.0630 Subpart 2.

Oil Release, Fire, and Explosion Safeguards

The principal risk of oil releases, fire, and explosions associated with the trucking alternative would be associated with loading and unloading of the trucks and traffic accidents. Safeguards during loading and unloading operations would include vapor control measures and containment barriers, as well as adherence to rigorous safety protocols.

As discussed in 7853.0250, truck hazmat incidents occur more frequently than pipeline accidents. Safeguards would include proper vehicle maintenance, extensive driver training, and following all applicable safety statutes, rules and regulations.

Other Safeguards and Controls

The trucking alternative would be subject to safeguards and controls required of commercial drivers under U.S. Department of Transportation, Federal Motor Carrier Safety Administration Regulations and state laws. These include drug testing, special training, insurance requirements and mandatory driver rest periods. Additional safeguards would come through enforcement of traffic regulations and a vigorous maintenance program.

B.3.c. Induced Developments

Utility Use

The trucking alternative is not expected to have any impact on utility use outside of the loading and unloading facilities. NDPC has not designed such facilities, and is, therefore, unable to estimate power consumption.

Water Use

The trucking alternative is not expected to require significant water use.

Vehicular Traffic

The primary routes between Beaver Lodge, North Dakota and Superior, Wisconsin would make use of two major roads across Northern Minnesota. The first, U.S. Highway 2, stretches from Grand Forks, North Dakota through Duluth, Minnesota to Superior, Wisconsin. The major population centers along this route include Grand Forks, Bemidji, Grand Rapids and Duluth. A significant portion of this route is two-lane and crosses through the Mississippi Headwaters State Park, the Chippewa National Forest and the Leech Lake Reservation. U.S. Highway 2 is a heavily-used travel path for commercial and private traffic in northern Minnesota.

The second route across the state would follow I-94 until just east of Fargo, North Dakota, where it would move to Highway 10 until hitting Detroit Lakes. It would then continue on Highway 34 through Park Rapids, Minnesota, until it joined Highway 200 just south of Walker, Minnesota. From Walker, it would pass through Remer, Minnesota and Hill City, Minnesota, before joining Highway 2 just north of Floodwood, Minnesota. It would then follow Highway 2 through the cities of Hermantown and Duluth, Minnesota. This is also a predominately two-lane road and this route crosses the Leech Lake Reservation and multiple state and national forests. Like U.S. Highway 2, I-94 is a heavily-used travel path for commercial and private traffic in northern Minnesota.

The Trucking Alternative would place 3,628 trucks and trailers on the roads of North Dakota, Minnesota and Wisconsin every day of the year. This traffic would be moving 24 hours per day.

The increased traffic on existing highways between Beaver Lodge, North Dakota and Superior, Wisconsin could increase wear on the

existing highway infrastructure and result in highway repairs potentially being required sooner than if the additional traffic were not to occur on the highways. In addition, there may be additional demand for public safety officers as more trucks on the road will create more opportunities for traffic accidents.

NDPC believes that use of the trucking alternative would place an unacceptable burden on the road infrastructure along these routes and be extremely disruptive to the communities that would be impacted.

Agriculture

While NDPC cannot calculate or quantify the impacts increased truck traffic may have on agricultural operations, it is anticipated that delays, increased accident rates and the greatly increased need for road maintenance work would hinder these operations. The volume of trucks on the road would impact agricultural operations through increased traffic, but NDPC is unable to quantify what impact the additional traffic would have. Such impacts cannot be calculated, but would result from delays, increased accident rates and greatly increased need for road maintenance work.

Relocation of Persons

NDPC does not expect that persons would need to be relocated for daily operation of the trucking alternative. However, the greatly increased traffic noise and volume may result in some voluntary population changes along the route.

Construction and operation of the trucking facility at the Clearbrook Terminal in Minnesota may require acquisition of additional property. This could result in the relocation of persons. Design work has not been completed on a trucking alternative; therefore, the potential impacts associated with relocation cannot be assessed.

B.4. Rail Alternative

Implementation of the rail alternative would require construction of new lateral rail lines in as-yet unidentified locations. Accordingly, NDPC cannot give specific details of some aspects of this alternative. Please see Section 7853.0540, part A.6 of this Application for additional discussion of the rail alternative.

Rail traffic would also distribute the impacts discussed below across existing rail routes through the State of Minnesota if the Project is not constructed.

B.4.a. Wastewater, Air Emissions and Noise Sources

Point Discharges to Water

The Rail Alternative would require the construction of rail car loading and off-loading facilities including construction of new aboveground lateral service lines to reach the rail cars. Discharges may result from releases caused by accidents. A Spill Prevention Plan would be developed to identify the precautions and measures to be taken in the event of a release. In addition, NDPC would prepare an Environmental Protection Plan that would outline steps to ensure correct handling of site stormwater.

Area Runoff

Area runoff adjacent to the constructed rail car loading and off-loading facilities would increase as a result of the Rail Alternative. If facilities were located in Minnesota at or near Sandpiper facilities, runoff could impact waters identified in Section 7853.0610 Subpart 2(G), as well as waters adjacent to newly constructed facilities. NDPC would implement necessary erosion control measures during and after construction, where appropriate, to minimize erosion and sedimentation. In addition, NDPC would develop the necessary Emergency Response Plan for the facility and incorporate the facility into its ongoing operations practices and emergency response planning.

Point Sources of Airborne Emissions

Airborne emissions would come from two sources. The loading and unloading facilities would present the risk of volatile organic compounds ("VOC") emitted during the loading and unloading process, as well as from storage tanks.

Additional gaseous and particulate emissions would occur from train engines, as shown below in Table 7853.0600-B.4.

Table 7853.0600-B.4 Rail Alternative Airborne Emissions							
Emission Source Description	**Pollutant Emissions (tpy)**						
	NO_X	**CO**	**SO_2**	**HC**	**PM_{10}**	**$PM_{2.5}$**	**GHG (CO_2e)**
Railroad diesel combustion emissions	11,629	1,145	139	429	286	278	437,416
• Emissions are calculated based on 42,755,574 total rail car ton-miles/day per rail car per day. • Emissions from the loading/unloading of crude oil have not been included. • The transportation method would require the construction of the large railcar loading and unloading facilities at the North Dakota stations, Clearbrook, MN and Superior, WI.							

Noise

Rail traffic is a source of noise pollution. As noted in Section 7853.0540, part A.6 of this Application, 1,710 rail cars could pass each point along whatever route was used each day.

Noise levels related to the construction of rail car loading and off-loading facilities as well as construction of new lateral aboveground rail service lines would be similar to those described for the proposed Project in Section 7853.0620 Subpart 4. NDPC anticipates that the rail transporters will obtain the necessary permits for operation of the additional trains and that operation will be in compliance with the Railroad Noise Emission Standards established in 49 C.F.R. 210. However, the increased rail traffic could increase the noise along the respective rail routes every day of the year.

B.4.b. Pollution Control and Safeguards Equipment

Air Pollution Controls

Air pollution controls for construction related to the construction of rail car loading and off-loading facilities, as well as construction of new lateral aboveground rail service lines, would be similar to those described for the proposed Project in Section 7853.0630 Subpart 1. Operational air emissions related to the rail alternative would likely be controlled with vapor recovery systems. NDPC anticipates that the rail transporters will obtain the necessary permits for operation of the additional trains.

Water Pollution Controls

The risk of water pollution from the rail alternative comes from daily operations at the loading and unloading facilities, as well as from accidents during transportation.

Water pollution at the loading and unloading facilities could result from releases caused by loading and unloading operations or from general surface runoff.

Oil Release, Fire, and Explosion Safeguards

As discussed in 7853.0250, rail hazmat incidents occur more frequently than pipeline accidents. The loading and offloading facilities would need to be equipped with release containment, fire suppression equipment, and potentially with vapor recovery systems. Specific details of these systems would be developed during the design phase of the project.

Rail safety is regulated by the Federal Railroad Administration, part of the U.S. Department of Transportation, which includes divisions governing the following:

- hazardous material transportation;
- locomotive and freight car safety inspections;
- operating practices, including carrier and employee training, safety rules, hours of service, accident reporting, and employee qualifications;
- track signals; and
- Federal track safety standards.

Any rail transportation developed as an alternative to the Project would be subject to and in compliance with federal safety regulations and industry standards.

Other Safeguards and Controls

NDPC's Environmental Policy states that protection of the environment is an integral element of the conduct of company business. Inspections of the rail car loading and off-loading facilities including new lateral above ground rail service lines would be conducted.

B.4.c. Induced Developments

Utility Use

Utility use would involve electrical power use at the loading and unloading facilities. NDPC, however, has not designed these facilities and is unable to estimate the required electrical power.

The Rail Alternative would at least require the construction of new lateral rail service lines. However, the rail lines would be privately

owned and, therefore, would not require any additional utility or other public services.

Water Use
The rail alternative is not expected to require significant water use.

Vehicular Traffic
Impacts to vehicular traffic would be created by trains crossing roadways. As noted in Section 7853.0540 Part A.6, approximately 855 rail cars would need to move in each direction past each point along whatever route was used every day. Accordingly, every road along a rail route would have 1,710 rail cars crossing each day, at all times of the day, throughout the year. This would cause traffic delays. Since trains are required to travel at reduced speeds through developed areas, the traffic delays could be of long duration.

Agriculture
Construction of new lateral above-ground rail service lines has the potential to significantly affect agricultural lands. Permanent right-of-way would be required for any new rail line and, if routed through agricultural lands, would have permanent effects on agricultural productivity. Estimates on the number of farms affected and construction activities within farm fields would be dependent upon establishing a route.

Daily operations of the rail alternative would not be expected to impact agricultural operations, other than through traffic delays caused by 1,710 rail cars traveling through agricultural areas and crossing roads each day in each direction. Around the clock train noise may also have an impact on livestock, although NDPC does not possess information to quantify that impact.

Relocation of Persons
NDPC does not expect that persons would need to be relocated for daily operation of the rail alternative. However, the alternative may result in some voluntary population changes along the route.

Construction and operation of potential rail facilities in Minnesota may require acquisition of additional property. This could result in the relocation of persons. Design work has not been completed on a rail alternative; therefore, the potential impacts associated with relocation cannot be assessed.

7853.0610 LOCATION

Subpart 1. Land description. If a particular route has been selected for the new (sections of) pipeline, indicate that route on an appropriate map. If no particular route has been selected, indicate on an appropriate map each possible route that has been given serious consideration.

An overview map of the preferred route in Minnesota is included as Appendix G.1 of the EIR. A more detailed route map book is included in Appendix G.5 of the EIR.

Subpart 2. Description of environment. For each route identified in response to subpart 1, list:

A. the names of cities or population centers through which the route passes;

In general, the preferred route avoids population centers and residential areas. However, seven municipalities are located within approximately 1 mile of the route. No municipal boundaries would be crossed by the route (see Table 7853.0610-2.A). Most of the cities within 1 mile of the route have populations less than 1,500. The largest community is the City of Crookston in Polk County, with a population of 7,891 persons.

Section 3.0 of the EIR provides details regarding socioeconomic conditions in areas associated with the Project.

Table 7853.0610-2.A Municipalities within 1.0 Mile of the Sandpiper Pipeline Project		
County/Municipality	Approximate Milepost	Population (2010)[a]
Polk		
Crookston (city)	319.0	7,891
Clearwater		
Clearbrook (city)	376.0	518
Bagley (city)	388.0	1,392
Aitkin		
Palisade (city)	534.0	167
McGregor (city)	547.0	391
Carlton		
Carlton (city)	593.0	862
Wrenshall (city)	596.0	399

[a] U.S. Census Bureau, http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

B. the number of miles of the route that pass through, respectively, federal lands, state lands, county or tax-forfeit lands, incorporated areas, and private land outside incorporated areas;

As shown in Table 7853.0610-2.B, the preferred route predominantly crosses private lands located outside of municipal areas (230.8 miles or approximately 75.5 percent of the route). The preferred route also crosses state lands (28.1 miles or approximately 9.2 percent of the route) and county lands (47.0 miles or approximately 15.4 percent of the route). County land includes tax-forfeited parcels. No federal lands or incorporated areas are crossed by the pipeline.

Refer to Section 4.2.1 in the EIR for additional details regarding land ownership.

Table 7853.0610-2.B Ownership of Lands Crossed by the Sandpiper Pipeline Project Preferred Route		
Ownership	Crossing Length (miles)	Percentage of Route
State Lands	28.1	9.2
County Lands	47.0	15.4
Private Lands	230.8	75.5
Total [a]	**301.6**	**100.0**

[a] The source of this data is the MNDNR 2008 GAP Stewardship dataset available on MNDNR's DataDeli. The total does not equal the sum of the addends, This data should be used as an approximation only, as the GAP dataset has overlapping features, causing some crossings to be over-represented. NDPC continues to consult with private landowners, counties, and state agencies regarding the ownership of lands crossed by the Project route.

C. the general soil types along the route and the approximate percentage of each;

Table 7853.0610-2.C provides a summary of significant soil characteristics identified along the preferred route by county. Detailed soil characteristics along the majority of the preferred route were identified and assessed using Soil Survey Geographic ("SSURGO") data; however, SSURGO data was not available for Crow Wing County; therefore, NDPC used Natural Resources Conservation Service ("NRCS") State Soil Geographic ("STATSGO2") data.

Refer to Section 6.0 in the EIR for additional information on soils in the Project area.

Table 7853.0610-2.C
Soil Characteristics in the Sandpiper Pipeline Project Area

County	Total Acres in County [a]	Prime Farmland	Hydric Soils	Compact. Prone	Highly Erodible		Reveg. Concerns	Stony/ Rocky	Shallow to Bedrock
					Water	Wind			
		Percent of Total Acres in County [b]							
Polk	847.3	83.5	49.2	33.6	2.8	57.0	16.8	0.2	0.0
Red Lake	161.2	77.9	97.9	3.1	1.5	68.9	22.1	0.0	0.0
Clearwater	552.9	84.6	23.1	9.5	19.5	41.9	16.8	0.0	0.0
Hubbard	746.5	52.1	23.9	7.6	28.1	94.4	51.5	0.0	0.0
Cass	665.6	51.6	16.3	10.3	22.5	87.1	48.0	0.0	0.0
Crow Wing	70.8	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0.0
Aitkin	674.1	45.0	58.3	42.1	6.8	82.4	46.7	0.0	0.0
Carlton	547.7	50.0	25.5	28.7	16.0	45.9	48.6	2.0	0.0 [c]
Total	**4,266.1**	**61.2**	**35.7**	**21.3**	**14.7**	**70.0**	**36.5**	**0.3**	**0.0**

N/A Data not available from the STATSGO2 database for Crow Wing County.

[a] Acreage is based on a 120-foot-wide construction right-of-way and additional temporary workspace.

[b] Percentages will not add-up to 100 percent, as soils may have more than one characteristic listed in the table.

[c] The preferred route will cross 2.5 miles of shallow bedrock in Carlton County based on regional digital data. This information was not reflected in NRCS soils data.

D. the general terrain along the route;

Topography across the preferred route varies widely given the variable nature of glacial deposition. The interrupted drainage of glacial terrain can be of low relief and include wetlands, lakes, and gently rolling to undulating hills and ridges, as well as hummocky areas of high relief with steep hills and ridges associated with glacial end moraine deposits. Additionally, glacial erosion can remove unconsolidated deposits and scour bedrock, and glacial meltwater can incise significant valleys into bedrock. Elevations in the Project area range from approximately 797 feet to 1,678 feet above mean sea level.

Refer to Section 5.1 in the EIR for additional information on terrain and geology.

E. the types of vegetation along the route (including forest, brush, marsh, pasture, and cropland) and the approximate percentage of each;

Approximately 35.7 percent of the area affected by the construction right-of-way will involve forest land, consisting of deciduous, evergreen, and mixed forests. Approximately 37.7 percent of the area affected by the construction right-of-way will be agricultural land. This land consists of pastures or hay fields and cultivated crops such as corn, soybeans, wheat, oats, wild rice, and dry edible beans. Potatoes, sugar beets, vegetables, sod, and Christmas trees are also common crops in the counties crossed by the Project. The construction right-of-way will affect wetlands/open water (approximately 14.4 percent), open land (approximately 12.0 percent), and developed land (less than 1 percent). The wetlands include emergent herbaceous wetlands, woody wetlands, marshes, and open water; the open land consists of maintained rights-of-way, shrub/scrub areas, grasslands, developed open space, and barren land.

Refer to Section 7.1, Table 4.2-1, and Table 4.2-2 in the EIR for additional details regarding vegetation along the preferred route.

F. the predominant types of land use along the route (such as residential, forest, agricultural, commercial, and industrial) and the approximate percentages of each;

Construction along the approximately 302-mile-long segment across Minnesota will affect approximately 4,266.1 acres of land. The predominant land use identified along the preferred route is agricultural land, which covers 1,610.3 acres (or 37.7 percent) of the total construction area. Of the

agricultural land affected, approximately 1,004.4 acres is cultivated and the remaining 606.0 acres is pasture land. Forested land accounts for 1,524.5 acres (or 35.7 percent) of the total construction area. Other land uses are developed land (commercial and industrial) (6.8 acres or less than 1 percent), open land (510.2 acres or 12.0 percent), and wetland/open water (614.2 acres or 14.4 percent). The preferred route does not cross any heavily developed residential areas.

Refer to Section 4.2 in the EIR for additional details regarding land use.

G. the names of major lakes or streams and the number of wetlands of five acres or more through which the route passes, as well as any others into which liquid contaminant from the pipeline could flow;

The preferred route will cross numerous rivers and streams. Milepost locations and waterbody names for each waterbody crossing are provided in Appendix E of the EIR. Minnesota Public Waters Inventory watercourses, wetlands, and basins are presented in Sections 9.2.2 and 9.3.2 of the EIR.

NDPC initiated wetland surveys in 2013 and will conclude these surveys in 2014. Approximately 93 percent of the preferred route in Minnesota was surveyed for wetlands at the end of the 2013 field season. Through a combination of NWI and 2013 field data, NDPC determined that the preferred route will cross a total of 874 wetlands. This number will be further refined as surveys progress. A summary of the wetlands crossed by the pipeline are provided in Tables 9.3.1-2 and 9.3.2-1 of the EIR.

Refer to Sections 9.2 and 9.3 in the EIR for detailed information regarding waterbodies and wetlands.

H. trunk highways, railroads, and airports along the route;

Sandpiper will cross federal, state, county, city/township, and private/commercial roads, and railroads. In total, the preferred route will cross 304 roads as summarized in Table 7853.0610-2.H. A complete list of road crossings is included in Appendix B of the EIR.

Table 7853.0610-2.H Number of Roads Crossed by the Sandpiper Pipeline Project			
County	State or Federal	County/City	Private/Commercial
Polk	4	52	6
Red Lake	1	9	0
Clearwater	3	34	11
Hubbard	4	41	31
Cass	4	26	9
Crow Wing	0	2	2
Aitkin	2	22	4
Carlton	4	27	6
Total	**22**	**213**	**69**

Sandpiper will cross the Burlington Northern Santa Fe and the Canadian Pacific Railways at seven locations in Polk, Red Lake, Clearwater, Hubbard, and Aitkin counties. NDPC plans to cross most railroads by boring beneath them. Two crossings of the Burlington-Northern Santa Fe Railroad (one in Polk County at MP 307.5 and one in Clearwater County at MP 388.1) will be crossed by HDD. Both of these construction methods will allow the railroads to remain operational during construction.

Several airports are located within 1-mile of the preferred route in Minnesota. The airports include the Crookston Municipal Airport, the Bagley Airport, McGregor Municipal, and private airpark Sky Manor Aero Estates. NDPC will consult with the Federal Aviation Association and any other appropriate agencies regarding construction techniques and restoration of this area during the permitting process.

Refer to Section 4.3.6 in the EIR for additional details on highways, railroads, and airports.

I. national natural landmarks, national wilderness areas, national wildlife refuges, national wild and scenic rivers, national parks, national forests, national trails, and national waterfowl production areas through which the route passes, as mapped on the inventory of significant resources by the State Planning Agency;

Sandpiper will not cross any national natural landmarks, wilderness areas, wildlife refuges, parks, forests, or waterfowl production areas.

Sandpiper will cross the North Country Trail, a National Scenic Trail. Sandpiper will cross four Minnesota rivers that are listed on the National Rivers Inventory. None of these are federally designated as a National Wild and Scenic River.

Refer to Section 11.1 in the EIR for additional details on federal areas.

J. state critical areas, state wildlife management areas, state scientific and natural areas, state wild, scenic, and recreational rivers, state parks, state scenic wayside parks, state recreational areas, state forests, state trails, state canoe and boating rivers, state zoo, designated trout lakes through which the route passes, as mapped on the inventory of significant resources by the State Planning Agency; and

Sandpiper will not cross any state critical areas, scientific and natural areas, state wild, scenic, and recreational rivers, parks, scenic wayside parks, recreational areas, zoos, or designated trout lakes.

However, the preferred route will cross four state Wildlife Management Areas, seven state forests, two state trails, and five canoe and boating rivers. The route also will cross two state Aquatic Management Areas and four designated scenic byways.

Refer to Section 11.2 in the EIR for additional details on state areas.

K. national historic sites and landmarks, national monuments, national register historic districts, registered state historic or archaeological sites, state historical districts, sites listed on the National Register of Historic Places, and any other cultural resources through which the route passes, as indicated by the Minnesota Historical Society.

NDPC reviewed the Minnesota State Historic Preservation Office's ("SHPO") site files to identify previously recorded cultural resources within the Project's 250- to 450-foot-wide environmental survey area. Based on this review, four previously recorded sites were located within the environmental survey area; two were revisited during the 2013 NDPC survey. None of the previously recorded sites has been recommended as eligible for listing on the National Register of Historic Places ("NRHP"). No inventoried standing structures located in the environmental survey area are on file at the state agencies. No national historic sites and landmarks, NRHP-listed historic districts, or national monuments are known within the Project area.

NDPC conducted Phase I reconnaissance inventories of approximately 86 percent of the Project environmental survey area in Minnesota in 2013. The remaining Phase I reconnaissance inventories will be completed in 2014. In addition, NDPC is using statistically-based Geographic Information Systems ("GIS") predictive (sensitivity) models during the Phase I reconnaissance survey. Phase II evaluation studies were conducted at four sites in 2013.

NDPC prefers to avoid inventoried sites that may meet the criteria for listing on the NRHP. NDPC will conduct Phase II site evaluations if more information is needed to make a recommendation regarding National Register eligibility. If avoidance of a NRHP-eligible property is not possible, or places an undue burden on the Project, NDPC will consult with interested parties.

Refer to Section 10.0 and the Unanticipated Discoveries Plan (Appendix D) in the EIR for additional information regarding cultural resources.

7853.0620 WASTEWATER, AIR EMISSIONS, AND NOISE SOURCES

Subpart 1. Point discharges to water. Indicate the location, route, and final receiving waters for any discharge points. For each discharge point indicate the source, the amount, and the nature of the discharge (provide quantitative data if possible).

Potential discharges related to pipeline construction include hydrostatic test water discharges and trench dewatering discharges. All discharges will be implemented in accordance with NDPC's EPP and permits issued by the appropriate regulatory agencies. Table 7853.0620-1 presents typical source, amount, and nature of point discharges to water that could be expected for the Project.

Table 7853.0620-1
Source, Amount and Nature of Point Discharges

Source	Estimated Amount	Nature of Discharge
Trench Dewatering Discharges	Between 25,000 and 1.4 million gallons over the duration of the Project at each discharge location. Volume will be dependent on precipitation and groundwater levels.	Dewater excavated trenches that fill with rain water or infiltrated groundwater during construction.
Hydrostatic Test Water Discharges	Between 3.5 million and 5.7 million gallons at each discharge location. Volume will be dependent on the amount of new piping or tankage involved in the test/discharge.	The discharge of water used to pressure test the new piping and tankage.

Water used for hydrostatic testing will most likely be appropriated from local streams, rivers, or lakes and/or groundwater sources, such as high-capacity irrigation wells or municipal wells along the preferred route. NDPC has not selected specific streams, rivers, or lakes used for test water at this time. A list of major waterbodies that could potentially be used as sources of hydrostatic test water is provided in Appendix E of the EIR.

The water will typically be returned to the waterbody where it was appropriated; however, depending on site-specific conditions, engineering constraints, and permit conditions, the water may be discharged to land or a different waterbody after hydrostatic testing is completed. If test water is

discharged directly into a waterbody, energy dissipation devices such as splash pups will be used to reduce the discharge energy and to minimize stream bottom scouring. If the water is discharged to an upland area, energy dissipation devices, such as staked straw bale structures and controlled discharge rates, will be used to minimize soil erosion and subsequent release of sediments to nearby waterbodies and wetlands.

Testing of the pipeline will likely be conducted in segments and the water will be discharged at various times and locations. Rate and quantity of individual discharges will be dependent on the length of the pipeline segment tested and on applicable permit conditions.

The other type of potential point discharge to surface waters associated with pipeline construction is the discharge of water during trench dewatering activities. NDPC cannot predict the locations of discharge from trench dewatering at this time. The need for trench dewatering will be dependent on local weather conditions, groundwater conditions, and construction constraints. Trench dewatering will be conducted in accordance with applicable permit requirements. Filtering devices, such as geotextile filter bags and/or straw bale structures, will be used as needed to reduce the amount of suspended solids in the discharge water.

Subpart 2. Area runoff. Indicate the area from which runoff may occur, potential sources of contamination in the area, and receiving waters for any runoff.

The construction right-of-way, additional temporary workspaces, pipeyards and contractor yards are potential areas for stormwater runoff along the pipeline route. During construction, potential sources of pollutants in runoff from these areas will be primarily associated with the erosion of soil in disturbed areas and the deposition of sediments in adjacent waterbodies. Potential receiving waters for stormwater runoff include those waterbodies crossed by or adjacent to the pipeline route, pipeyard, or contractor yard. A list of major waterbodies that could potentially be receiving waters is provided in Appendix E of the EIR. NDPC will implement appropriate erosion control measures during and after construction to minimize erosion and sedimentation. These control measures are discussed in Section 7853.0630. Applicable state and local permits related to erosion and sediment control will be obtained for the project.

NDPC accessed a MPCA database to identify sites with known or potential contamination within 0.5 mile of the Project. NDPC identified 30 such sites. Of these sites, 21 sites were determined to be more than 500-feet from the

preferred route and, therefore, are not anticipated to impact or be impacted by the Project. Prior to construction of the Project, NDPC will assess the potential for encountering contaminated groundwater near any additional sites that are identified within 500 feet of the preferred route. If necessary, appropriate avoidance or mitigation measures will be developed and implemented in accordance with applicable state or federal regulations.

Table 7853.0270-3.1 provides a 5-year recordable pipeline incident record on the NDPC System. NDPC will be conducting a desktop analysis to determine if historic releases are identified along the preferred route. If identified, the contractor will be notified of the locations of these previous releases.

NDPC is currently developing procedures to be implemented in the unlikely event contaminated soils are encountered during construction. These procedures and mitigation measures will be provided to the contractor.

Potential sources of contamination are discussed in Section 8.3 in the EIR.

Subpart 3. Point sources of airborne emissions. Estimate the quantity of gaseous and particulate emissions that would occur during full operation of the pipeline from each emission source and indicate the location and nature of the release point.

The Project will include the construction of external floating roof storage tanks ("EFRT") at the new NDPC Clearbrook Terminal. The scope of work at the new Sandpiper Clearbrook Terminal will be subject to air permitting requirements found in Minnesota Administrative Rules Chapter 7007. NDPC plans to submit a stationary source applicability determination request to the MPCA regarding the stationary source status of the proposed new terminal. NDPC will submit an appropriate air permit application based on the result of stationary source determination. NDPC will complete the required New Source Performance Standards ("NSPS") notifications and submittals for the new storage tanks. The potential emissions at the new NDPC Clearbrook Terminal will be VOCs from new external floating roof storage tanks, piping components (such as valves, pump seals, and flanges), fugitive emissions, and pipeline operations equipment and is estimated to be approximately less than 24 tons of VOC per year.

Airborne emissions are discussed in Section 12.0 of the EIR.

Subpart 4. Noise. Indicate the maximum noise levels (in decibels, A scale) expected along the route. Also, indicate the expected maximum increase over ambient noise levels.

Pipeline Construction

The heavy equipment needed to construct the pipeline will have a short-term impact on noise levels in the vicinity of the construction right-of-way. Typical pipeline construction equipment (e.g., bulldozers, loaders, backhoes and sideboom tractors) generate between 80 to 90 decibels within 50 feet of the equipment. This equipment noise will be limited to the period of construction. Because the preferred route crosses predominantly rural and undeveloped areas, the general public should experience limited nuisance noise. In the vicinity of residential areas, the contractor will take all reasonable measures to control construction-related noise.

Ongoing Operations

Noise is not generated along the pipeline right-of-way during normal operation. The new Clearbrook terminal will result in additional operational noise in the immediate vicinity of the terminal. NDPC's standards restrict the noise levels (due to Company equipment) around neighboring dwellings and industrial facilities to 40 decibels, measured at a distance of 50 feet from the affected structure, unless state regulations allow higher noise levels. Noise control is incorporated into the design if these levels are exceeded. NDPC will conduct pre-construction and post-construction noise surveys at the Clearbrook terminal.

7853.0640 INDUCED DEVELOPMENTS

Subpart 1. Utility use. Indicate the extent to which the facility would create or add to the need for expanded utilities or public services.

Operation of the Project will require new utilities to be routed to the new Clearbrook terminal.

Subpart 2. Water use. Indicate the amount of water that would be appropriated for use in connection with the pipeline, the expected source of water, and the manner in which the water would be used.

NDPC will hydrostatically test the new pipe to verify its integrity prior to placing it in service. Hydrostatic testing will be conducted in accordance with the PHMSA regulations. The procedure consists of filling a section of pipe with water and maintaining a prescribed pressure for a prescribed period of time. Hydrostatic testing takes place prior to the pipeline being placed into service.

NDPC is evaluating potential sources for appropriating hydrostatic test water, including major waterbodies crossed by or adjacent to the proposed pipeline and/or groundwater sources, such as high-capacity irrigation wells or municipal wells. NDPC is also evaluating transferring water from one test section to another to minimize the total quantity of water needed to complete the hydrostatic test. NDPC will obtain applicable water appropriation and discharge permits for hydrostatic testing activities. NDPC anticipates that between 3.5 million and 5.7 million gallons of water will be used for each test segment, and up to 6 million gallons of water could be used to test new tanks at the Clearbrook terminal. Exact volumes are not currently available and will be dependent on the amount of new piping and the size of tankage involved in each hydrostatic test. A list of major waterbodies that could potentially be used as sources of hydrostatic test water is provided in Appendix E of the EIR.

Water used for hydrostatic testing will be discharged on land, returned to the waterbody where it was appropriated, or discharged to a different waterbody after hydrostatic testing is completed, depending on the Project's National Pollutant Discharge Elimination System ("NPDES") permit conditions. If the water is discharged to an upland area, energy dissipation devices, such as straw bale structures and controlled discharge rates, will be used to minimize the potential for erosion and subsequent release of sediment into nearby surface waters and wetlands. If hydrostatic test water is discharged directly into waterbodies, energy dissipation devices will be used to reduce the

discharge energy to prevent stream bottom scour. NDPC will develop site-specific discharge plans for each waterbody that receives hydrostatic test discharges. At this time, NDPC is not aware of any chemical additives that will be introduced to the hydrostatic test water or chemicals that will be used to dry the pipelines following the hydrostatic testing.

Subpart 3. Vehicular traffic. Estimate the amounts and types of vehicular traffic that would be generated by the facility due to construction activity and, later, operational needs.

Short-term impacts on local transportation systems may result from: construction of the pipeline across roads and railroads; movement of construction equipment and material to work areas; and daily commuting of the construction workforce to work sites. These impacts are not expected to be significant.

NDPC typically will construct the pipeline underneath paved roadways and railroads using road-boring equipment. NDPC plans to cross two railroads using the HDD method. Both of these methods allow NDPC to install the pipeline beneath the road without closing it, thereby avoiding disruptions to vehicular or railcar movement and physical impacts on road/railroad beds. Unpaved roadways will typically be crossed by boring or by using the open-cut method. The latter method will temporarily disrupt road traffic as the pipe trench is excavated across the roadway. To minimize traffic delays at open-cut crossings, NDPC will establish traffic detours before excavating the roadbed. If no reasonable detours are feasible, at least one traffic lane of the road will be maintained, except for brief periods when road closure is essential to install the pipeline. NDPC will minimize the duration of open-cut crossings. NDPC will work with local authorities to notify local residents prior to road closures and will attempt to avoid closing roads during peak traffic hours.

To maintain safe conditions, NDPC will direct its construction contractors to adhere to local weight restrictions and limitations for construction vehicles, and to remove soil that is left on the road surface by the crossing of construction equipment. In addition, when it is necessary for construction equipment to move across paved roads, mats or other appropriate measures will be used to minimize damage to the road surface.

NDPC anticipates up to eight truckloads of 24-inch pipe and up to 14 truckloads of 30-inch pipe will be needed per mile of pipeline over area roads to deliver the pipe along the construction route. Truck traffic associated with transporting this pipe, as well as other construction-related travel associated

with the Project, may increase the workload of local authorities to assist with traffic control. In addition, local authorities may need to assist with short-term detours at pipeline road crossings or delays in traffic flow from large, slow-moving vehicles. NDPC does not anticipate that these project-related demands on local authorities will be significant.

The movement of construction personnel, equipment, and materials from contractor and pipeyards to the construction work area will result in additional short-term impacts on local transportation systems. Several construction-related trips will be made each day to and from the job site. Traffic will remain fairly consistent throughout the construction period, and will typically peak during early morning and evening hours. NDPC anticipates that road congestion will increase during these peak hours but will not significantly disrupt the normal flow of traffic in the Project area.

Incremental road congestion could be caused by construction workers commuting to and from work sites on a daily basis. Notable increases in rush hour traffic, however, are not anticipated because of the generally rural location of the Project. Pipeline construction is also generally scheduled to take full advantage of daylight hours with most workers commuting during off-peak hours (i.e., early morning and evening). In addition, construction workers typically leave their personal vehicles at contractor yards and participate in shared rides to work sites. This will help reduce road congestion. Finally, workers will generally be dispersed along the entire length of the pipeline route, as opposed to concentrating at a single work site, thereby reducing impacts on traffic at any one location.

For the most part, day-to-day operational traffic related to Sandpiper would not be noticeable. NDPC and its contractors would access the pipeline right-of-way and aboveground facilities as required to perform vegetation maintenance and monitoring activities. Some increased traffic will occur in localized areas of pipeline maintenance activities, but these instances will be infrequent and of short duration.

Subpart 4. Agriculture. Estimate the number of farms and the number of acres of cropland and pasture land that would be affected by construction of the pipeline. Indicate known circumstances with regard to the pipeline that would tend to reduce agricultural productivity along the route. Estimate the amount of excavation, backfilling, grading, soil compaction and soil mixture, and ditching to be done in farm fields. Estimate the number of drainage ditches to be impacted by the pipeline.

Agricultural land accounts for 1,610.3 acres (or 37.7 percent) of the total construction area (see Table 4.2-1 of the EIR). Of the agricultural land affected, approximately 1,004.4 acres is cultivated and the remaining 606.0 acres is pasture land. NDPC continues to work with landowners to secure waivers of the Minnesota requirement for a minimum of 54-inch depth of cover in cultivated areas. Assuming NDPC receives the waivers for 36-inch minimum depth of cover for agricultural lands, and taking into account that topsoil is removed prior to excavation, the total grading of topsoil in agricultural lands will comprise approximately 2,050,032 cubic yards; and the total excavation of trench/subsoil in agricultural lands will comprise approximately 402,718 cubic yards. NDPC has not yet determined the number of farms that would be affected by Project construction. Approximately 28 drainage ditches will be crossed by the new pipeline.

Construction activities will temporarily utilize active cropland within construction right-of-way and additional temporary workspaces. Construction activities may also interfere with center-pivot irrigation systems, planting or harvesting, depending on the construction season. Following construction, agricultural activities will resume within the temporary and permanent pipeline right-of-way. NDPC will maintain access to fields, storage areas, structures, and other agricultural facilities during construction, and will maintain irrigation and drainage systems that cross the right-of-way to the extent practicable. Agricultural land in the construction right-of-way will generally be taken out of production for one growing season and will be restored to previous uses following construction. Landowners will be compensated for crop losses and other damages caused by construction activities. Losses and disturbances to production, harvesting, irrigation, and drainage systems will be identified and measures will be taken to avoid, mitigate, minimize, or otherwise address those effects in accordance with the Agricultural Protection Plan ("APP") (Appendix C of the EIR).

NDPC will implement measures to avoid, minimize, or mitigate potential impacts on soil productivity in accordance with the APP (Appendix C of the EIR). These measures include topsoil segregation, stone removal, and

measures to avoid compaction or loosen compacted soils. To prevent soil compaction, drainage alteration, and damage to crops, operation of maintenance equipment on agricultural lands will be limited to access routes agreed to with landowners.

NDPC will also take appropriate measures to accommodate livestock operations during construction. To minimize short-term disruption to livestock operations, NDPC will minimize the length of time that the trench is open and will coordinate with landowners to minimize disruption of access. Where appropriate, NDPC will maintain temporary access ways across the trench as necessary to allow the passage of livestock, and will erect temporary fences (including gates) as necessary to contain and protect livestock from construction-related hazards. After completing construction, fences and gates will be rebuilt to their former condition or better.

Refer to Section 4.2 of the EIR for additional discussion regarding impacts on agricultural lands.

Subpart 5. Relocation of persons. Estimate the number of people that would have to relocate if the pipeline were constructed.

Since construction and operation of the pipeline will require acquisition of additional property, the project could result in the relocation of persons.