1.0 INTRODUCTION

This Minnesota Environmental Information Report ("EIR") was prepared in support of the Enbridge Pipelines (North Dakota) LLC[1] (referred to herein as "EPND") Application to the Minnesota Public Utilities Commission ("MPUC") for a Pipeline Routing Permit ("PRP") and Certificate of Need ("CN") to construct and operate the Sandpiper Pipeline Project ("Sandpiper" or "Project") in Minnesota. This report provides: an assessment of the existing environment along the Project's preferred route and rejected alternate routes; an analysis of human and environmental impacts that could potentially result from pipeline right-of-way preparation, construction, operation, and maintenance of the Project; and a summary of the protection and restoration measures to be implemented to avoid and/or minimize environmental impacts. The EIR has been prepared in accordance with the MPUC's Pipeline Routing rules (Chapter 7853) and supplements information provided in both the PRP and CN applications as follows:

- Location of Preferred Route and Description of Environment (PRP, Section 7852.2600);
- Environmental Impact of Preferred Route (PRP, Section 7852.2700);
- Right-of-Way Protection and Restoration Measures (PRP, Section 7852.2800);
- Evidence of Consideration of Alternative Routes (PRP, Section 7852.3100);
- Information Required (CN, Section 7853.0600);
- Alternatives (CN, Section 7853.0540)
- Location (CN, Section 7853.0610);
- Wastewater, Air Emissions, and Noise Sources (CN, Section 7853.0620);
- Pollution Control and Safeguards Equipment (CN, Section 7853.0630); and
- Induced Developments (CN, Section 7853.0640).

1.1 PROJECT DESCRIPTION AND NEED

The Project is a new crude oil pipeline and associated facilities to increase crude oil transportation services from North Dakota to refineries in the Midwest and the East Coast in response to the demand for a growing supply of Bakken crude oil. The Project is

[1] Enbridge Pipelines (North Dakota) LLC, is a limited liability company duly organized under the laws of the State of Delaware and is referred to as "EPND" in this document. EPND is a wholly owned subsidiary of Enbridge Energy Partners, L.P. ("EEP") which is a Delaware master limited partnership. 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 EPND are referred to as "Enbridge" in this document.

approximately 612-miles in length and will consist of a 374-mile-long, 24-inch-diameter crude oil pipeline and associated facilities from the existing Beaver Lodge station south of Tioga, North Dakota to a new EPND Terminal at Clearbrook, Minnesota and a 238-mile-long, 30-inch-diameter pipeline and associated facilities from Clearbrook, Minnesota to the Superior Terminal in Superior, Wisconsin. The Project will deliver an annual capacity of 250,000 barrels per day ("bpd") from the existing Beaver Lodge station to Berthold, North Dakota, and an annual capacity of 225,000 bpd of crude oil from Berthold into Clearbrook, Minnesota, and an annual capacity 375,000 bpd of crude oil from Clearbrook, Minnesota to Superior, Wisconsin.

The Project's purpose is to transport the growing production of domestic crude oil from the Bakken and Three Forks formations in the Williston Basin[2] of eastern Montana and western North Dakota to meet the increased demands of refineries and markets in the Midwest and the East Coast. The capacity provided by the Project will provide independent utility to EPND and its customers. EPND's shippers will use the pipeline to transport crude oil to an EPND affiliate terminal in Superior, Wisconsin. From there, the crude oil can be delivered to various other pipelines and refineries. Additionally, the Project will have the ability to provide redundant service[3] at Clearbook to the existing EPND Line 81 deliveries in order to ensure reliable deliveries of 60,000 bpd annual capacity into the Minnesota Pipe Line Company system for delivery to Minnesota refineries. The Project is a positive step toward North American energy security and independence that will increase access to a growing, long-term, and reliable domestic source of energy and decrease reliance on crude oil imports from countries that are often unstable or unfriendly to the United States' interests.

The need for the Project is based on several factors, including:

- increasing demand for crude oil produced in North America from refineries and markets in the Midwest and the East Coast;
- compared to other modes of transportation, transporting North Dakota crude oil by pipeline to Midwest refineries and beyond is the safer and more economic transportation alternative; and
- reducing United States dependence on foreign offshore oil through increased access to stable, secure domestic crude oil supplies.

[2] 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.

[3] Redundant service is indicative of system design that allows for duplication of delivery if one component is unavailable.

The Project will entail construction and operation of the following infrastructure in Minnesota:

- approximately 299 miles of new 24- and 30-inch diameter, underground crude oil pipeline;
- a new terminal facility located at Clearbrook (near milepost ["MP"][4] 376.0) including two (2) 150,000 barrel ("bbl") tanks, two (2) 500 horse power ('HP') injection pumps to inject 150,000 bpd from the existing EPND Line 81 into the Sandpiper Pipeline, two (2) 650 HP transfer pumps for delivery to EPND, and three (3) sets of leak detection meters (1 set for delivery from Sandpiper pipeline to EPND tankage, 1 set for Line 81 delivery to EPND tankage, and 1 set for flow injection from EPND tankage into the Sandpiper pipeline). It will also include all associated terminal piping, interconnections, valves, manifold, and sumps, as well as an electrical substation, a fire suppression system (e.g., building, pond, piping), a maintenance building and a cold storage building;
- pumping facilities will be installed at the new terminal at Clearbrook, Minnesota which will include four (4) 5,500 HP pumps, four (4) 5,750 HP Variable Frequency Drives ("VFD"), a pump shelter, four (4) VFD buildings, and a switchgear building. Additionally, it will include two (2) coriolis meters, a 24-inch Pipeline Inspection Gauge ("PIG") receiver and a 30-inch PIG launcher, as well as associated pump station piping and valves;
- new pipeline inspection tool launch and receiver traps, along with a mainline valve, will be installed at a site near Pine River, Minnesota; and
- approximately 15 mainline valves placed at major waterbody crossings and other features along the preferred route (presented in Table 1.2.4-1).

A general location map depicting the Project's preferred route in Minnesota is included as Figure 1.1-1. Detailed route maps of the Project are included in Appendix G.5. The Project will cross portions of Polk, Red Lake, Clearwater, Hubbard, Cass, Crow Wing, Aitkin, and Carlton counties. Table 1.1-1 summarizes the length of pipeline in each county.

[4] Note that mileposts denoted in this document are location references only and should not be used as definitive measurements of the pipeline.

Figure 1.1-1
General Project Location Map

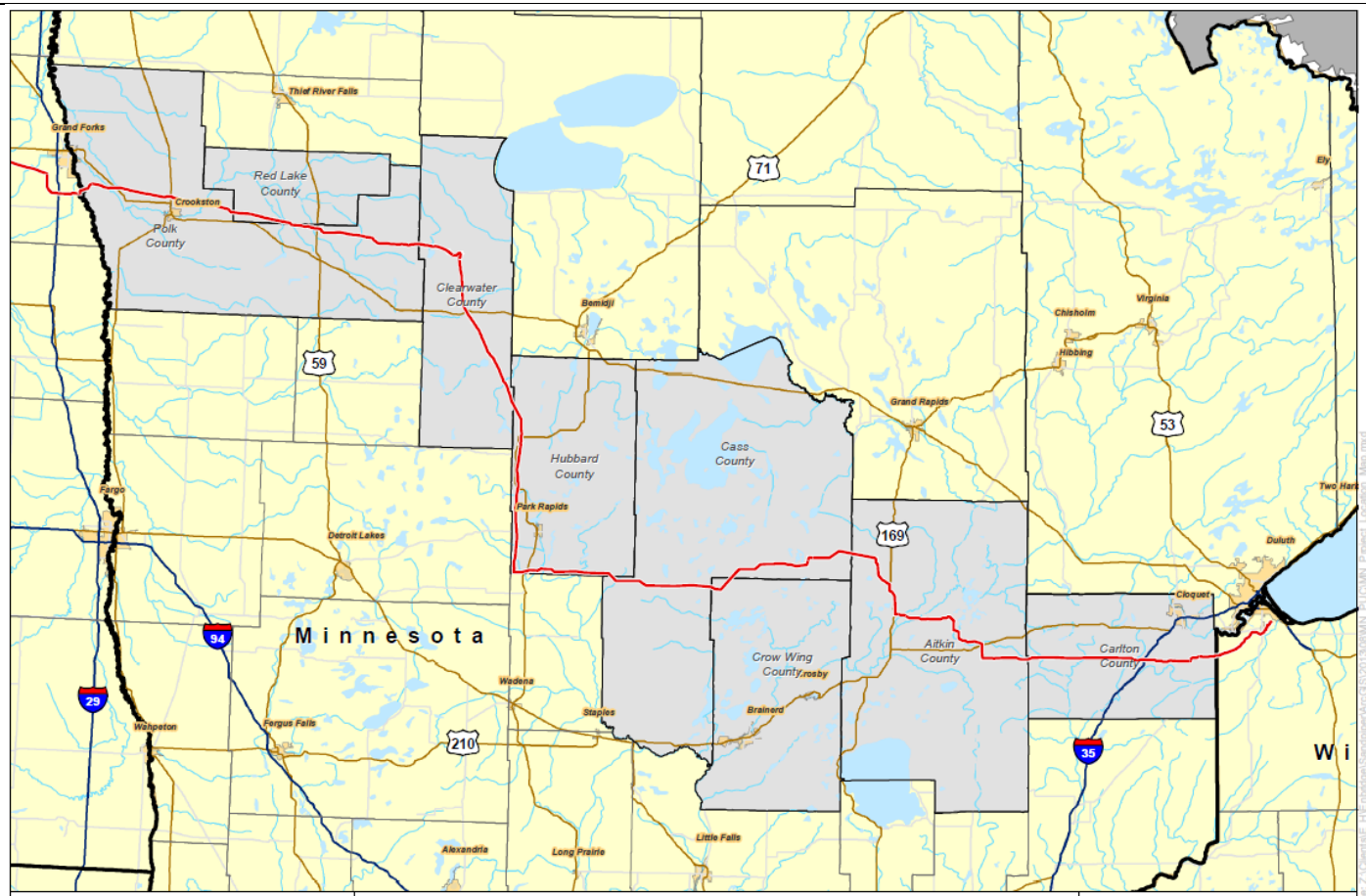

Table 1.1-1
Location and Length of the Sandpiper Pipeline Project in Minnesota

County	Milepost Range [a]	Pipeline Length (miles)
Polk [b]	299.1 – 330.2	31.1
	341.5 – 367.6	26.0
Red Lake	330.2 – 341.5	11.4
Clearwater	367.6 – 407.1	39.5
Hubbard	407.1 – 459.5	52.4
Cass [b]	459.5 – 479.5	20.0
	484.4 – 510.5	26.2
Crow Wing	479.5 – 484.4	4.8
Aitkin	510.5 – 560.4	49.9
Carlton	560.4 – 597.8	37.4
	Total	**298.7**

[a] Mileposts are used for reference and may not reflect actual distances.
[b] Two milepost ranges are presented for Polk County as the route exits Polk County into Red Lake County before entering Polk County again. For Cass County, the route exits Cass County into Crow Wing County before entering Cass County again.

The Project will generally be co-located with existing pipeline or third-party rights-of-way in Minnesota to the extent practicable. From the North Dakota border, at approximate MP 299, the Project will generally follow EPND's existing Line 81 right-of-way for 77 miles across Polk, Red Lake, and Clearwater counties to approximately MP 376 at Clearbrook, Minnesota. At Clearbrook, the pipeline will turn south and will generally follow the existing Minnesota Pipe Line Company right-of-way for approximately 64 miles across Clearwater and Hubbard counties to a point near Hubbard, Minnesota. From Hubbard, the pipeline extends east by co-locating with existing electrical transmission, pipeline, and small utility rights-of-way, and crosses minimal greenfield parcels for approximately 158 miles across Hubbard, Cass, Crow Wing, Aitkin, and Carlton counties to MP 598, where it will cross the Minnesota/Wisconsin border.

Approximately 212 miles (70 percent) of the construction right-of-way will be co-located with or parallel to and offset from other existing rights-of-way. Other third-party rights-of-way include roads, pipelines and electric transmission lines.

EPND proposes to begin construction of the Project in the fourth quarter of 2014. Construction will occur over approximately 14-16 months, with an in-service date in the first quarter of 2016.

1.2 LAND REQUIREMENTS

Construction of the Project will generally require a 120-foot-wide construction right-of-way in upland areas. Uplands are defined as an elevated region of land lying above the level

where water flows or collects in basins. This 120-foot-wide construction right-of-way will allow for temporary storage of topsoil and spoil, as well as accommodate safe operation of construction equipment. The Project will generally use a 95-foot-wide construction right-of-way in wetland areas. Table 1.2-1 presents temporary and permanent land requirements for the Project.

Table 1.2-1
Land Requirements for the Sandpiper Pipeline Project

Route Segment	Permanent Right-of-Way (feet)	Temporary Workspace (feet)	Total Land Requirements (feet)
North Dakota Border to Clearbrook – Co-located with existing EPND pipeline	55 (~25 new)	65 (upland)	120 (upland)
		40 (wetland)	95 (wetland)
Clearbrook to Wisconsin Border – Co-located with Utility	50	70 (upland)	120 (upland)
		45 (wetland)	95 (wetland)
North Dakota border to Wisconsin Border – Greenfield	50	70 (upland)	120 (upland)
		45 (wetland)	95 (wetland)

From the North Dakota border to Clearbrook where co-located with existing EPND rights-of-way, the right-of-way requirements in upland areas include typically up to 55-feet of permanent easement, of which 25-feet would be new easement, and 65-feet of temporary workspace for a total land requirement of 120-feet. In wetland areas, the temporary workspace requirement would be reduced to 40-feet for a total land requirement of 95-feet. The 55-feet of permanent right-of-way will be comprised of 30-feet of EPND's existing permanent right-of-way and 25-feet will be new easement. In areas where Sandpiper will be co-located with other utilities or traversing greenfield (for the Project, the term greenfield is any portion of the route that is greater than 250-feet from the centerline of a known utility), the permanent right-of-way easement to be acquired will be 50-feet and would utilize 70-feet of temporary workspace. In wetland areas, the temporary workspace requirement would be reduced to 45-feet for a total land requirement of 95-feet. During construction, topsoil will normally be placed on one side of the working right-of-way, while the ditch spoil will be separated and located on the opposite side of the right-of-way. The working side (i.e., equipment work area and travel lane) will typically be 90-feet wide in uplands and 65-feet wide in wetlands; the working side will generally be located outside the existing right-of-way. Typical drawings depicting the construction footprint from the North Dakota border to Clearbrook in upland and wetland areas are included in Appendix F.

From Clearbrook to the Wisconsin border, the Project will require a construction footprint of 120-feet for standard pipeline construction in upland areas, including 50-feet of permanent easement and 70-feet of temporary workspace. In wetland areas, the temporary workspace requirement would be reduced to 45-feet for a total land requirement of 95-feet. The width of the spoil side and working side will vary depending on whether Sandpiper is co-located

with another utility or is constructed in a greenfield area. Typical drawings depicting the construction footprint from Clearbrook to the Wisconsin border in upland and wetland areas, whether parallel to third-party rights-of-way or in greenfield locations are included in Appendix F of the EIR.

A portion of the preferred route in eastern Minnesota is characterized by extensive wetlands; therefore, specialized construction methods will be utilized. The construction right-of-way and additional permanent right-of-way configurations in wetland areas are discussed in Section 1.3 of this report and in the Environmental Protection Plan ("EPP"), included as Appendix A.

1.2.1 Additional Temporary Workspaces

Additional temporary workspaces are required outside of the typical 120-ft-wide construction right-of-way to facilitate specific aspects of construction. Additional temporary workspaces will include areas to stage equipment, hold spoil material, and areas where construction methods require additional space. For example, additional temporary workspaces will be needed where the Project will cross features such as waterbodies, wetlands, roads, railroads, foreign pipelines and utilities, horizontal directional drill ("HDD") sites, and other special circumstances.

Table 1.2.1-1 lists the typical dimensions of additional temporary workspaces that will be used for pipeline construction.

Table 1.2.1-1
Typical Dimensions of Additional Temporary Workspaces for the Sandpiper Pipeline Project

Feature	Dimensions On Each Side of Feature [a]
Open-cut Road Crossings	100 feet by 75 feet
Bored Road , Foreign Pipeline, and Utility Crossings	100 feet by 75 feet
Railroad Crossings	200 feet by 100 feet
Pipeline Cross-Unders	100 feet by 75 feet
Waterbody Crossings >50 feet wide	200 feet by 100 feet
Waterbody Crossings <50 feet wide	200 feet by 100 feet
Horizontal Directionally Drilled Waterbody Crossings	200 feet by 100 feet
Wetland Crossings	200 feet by 75 feet

[a] Areas are in addition to the 120-foot-wide construction right-of-way

1.2.2 Pipe/Material Storage Yards and Contractor Yards

During construction, the Project will temporarily use off-right-of-way areas for pipe and materials storage. In addition, construction contractors will require off-right-of-way contractor yards to park equipment and stage construction activities.

EPND has tentatively identified several pipeyards, rail sidings and contractor yards necessary for construction; additional pipeyards and contractor yards will be identified as Project planning and engineering progresses. EPND has considered sensitive environmental features when planning the placement of pipeyards; the use of pipeyards will result in no impact to sensitive environmental features. The yards will be leased sites that will be restored upon the completion of the Project. While the locations of the pipeyards are subject to change, the tentative locations known as of the date of this filing are presented in Table 1.2.2-1.

Table 1.2.2-1
Pipe/Material and Contractor Yards Used for the Sandpiper Pipeline Project

County	Facility (number)	Current Use
Polk	Rail Siding (2)	Railroad
	Pipeyard (2)	Alberta Clipper Pipeyard/Agriculture
Hubbard	Rail Siding (1)	Railroad
	Pipeyard (1)	Pasture/Field
Cass	Pipeyard (1)	Pasture/Field
Carlton	Rail Siding (1)	Railroad
	Pipeyard (1)	Pasture/Field

1.2.3 Access Roads

Public roads will typically be used to gain access to the construction right-of-way. In areas where public roads are limited, existing privately-owned roads may be used to access the construction right-of-way. If public or privately-owned roads are not available, EPND may need to construct new access roads. Prior to use of private access roads, modifications to existing non-private roads, and construction of any new access roads, EPND will obtain landowner permission, conduct environmental surveys, and obtain applicable environmental permits and clearances.

At this time, EPND has tentatively identified a number of access roads that may be necessary for construction of the Project; additional roads will be identified as Project planning and engineering progresses. While the locations of the access roads are subject to change, a summary of known access roads is presented in Table 1.2.3-1.

Table 1.2.3-1
Access Roads Used by the Sandpiper Pipeline Project

County [a]	Milepost Range	Number of Access Roads
Polk	301.2 – 367.2	22
Clearwater	368.0 – 406.5	35
Hubbard	408.1 – 459.3	48
Cass	461.8 – 474.4, 485.3 – 508.8	37
Crow Wing	480.9 – 481.7	2
Aitkin	510.9 – 556.3	38
Carlton	563.1 – 588.5	20
	Total	**202**

[a] At this time no access roads are planned for Red Lake County.

1.2.4 Aboveground Facilities

Aboveground facilities associated with Sandpiper will include additional infrastructure at a new Clearbrook terminal, including two (2) 150,000 bbl tanks, two (2) 500 HP injection pumps to inject 150,000 bpd from the existing EPND Line 81 into the Sandpiper pipeline, two (2) 650 HP transfer pumps for delivery to EPND, and three (3) sets of meters (1 set for delivery from Sandpiper pipeline to EPND tankage, 1 set for Line 81 delivery to EPND tankage, and 1 set for flow injection from EPND tankage into the Sandpiper pipeline). The new Clearbrook terminal will also include all associated terminal piping, interconnections, valves, manifold, and sumps, as well as an electrical substation, a fire suppression system (e.g., building, pond, and piping), a maintenance building and a cold storage building.

Pumping facilities will also be installed at the new terminal at Clearbrook, Minnesota. These facilities include four (4) 5,500 HP pumps, four (4) 5,750 HP VFDs, a pump shelter, four (4) VFD buildings, and a switchgear building. Additionally, it will include two (2) coriolis meters, a 24-inch PIG receiver and a 30-inch PIG launcher, as well as associated pump station piping and valves.

Launch and receiver traps and a mainline valve will be installed at a site near Pine River, Minnesota. Additionally, approximately 15 mainline valves are currently planned to be installed in Minnesota based on preliminary engineering design and environmental surveys. Specifically, valve installation locations will be near major rivers, other environmentally sensitive areas, population centers, and pumping stations.

These facilities are summarized in Table 1.2.4-1.

Table 1.2.4-1
Proposed Aboveground Facilities Associated with the Sandpiper Pipeline Project [a]

County	Facility	Milepost [b]
Polk	Valve	300.2
Polk	Valve	309.6
Polk	Valve	319.1
Polk	Valve	325.7
Red Lake	Valve	331.5
Polk	Valve	343.0
Polk	Valve	348.6
Clearwater	Clearbrook Terminal and Pump Station Facility	376.0
Clearwater	Valve	348.7
Clearwater	Valve	401.0
Clearwater	Valve	403.6
Hubbard	Valve	445.1
Cass	Tool Launch and Receiver Traps and Valve	462.1
Aitkin	Valve	524.2
Aitkin	Valve	535.2
Carlton	Valve	595.7

[a] Facility locations are preliminary and subject to change based on engineering design.
[b] Mileposts are used for reference and may not reflect exact locations.

1.3 TYPICAL CONSTRUCTION SEQUENCE

A schematic depicting the typical pipeline construction sequence is provided as Figure 1.3-1. Specialized construction techniques (e.g., waterbody crossings) are described in subsequent sections of this document. Construction associated with aboveground facilities (e.g., the new Clearbrook terminal, pumping facilities, mainline valves and launcher/receivers traps) involves pipe reconfigurations and installation of equipment. Pipeline construction will follow a typical sequence as described in the following paragraphs.

First, the right-of-way is surveyed, staked, and prepared for clearing. The right-of-way is then cleared and graded, as necessary, to provide construction access and safe movement of equipment and personnel during construction. Silt fence and other erosion control measures are installed, and sensitive areas are marked for avoidance. Appropriate safety measures are implemented before excavation begins, including notification through the One-Call system to ensure third-party utilities and adjacent pipelines are properly marked. Pipe, valves, and fittings are transported to the right-of-way by truck and placed along the right-of-way by side boom tractors or mobile cranes.

After individual pipe sections are strung along the right-of-way they are bent to conform to the contours of the trench and terrain. The pipe segments are lined up, clamped, welded, and field coated, and the welds are inspected. Trenching may occur before or after the pipe has been welded. Trenching is typically conducted using a backhoe or crawler-mounted, wheel-type trenching machine. Where appropriate, topsoil is segregated according to applicable permit conditions. The prepared pipe is lowered into the trench and, where applicable, tied-in to existing facilities. During backfilling, subsoil is replaced first and then the topsoil is replaced. Precautions, such as padding the trench with soil, are taken during backfilling to protect the pipe from rock damage.

Once the pipeline has been welded and inspected, and the trench has been backfilled, the pipeline is hydrostatically tested to ensure its integrity prior to the line being filled with crude oil and placed into service. The right-of-way is then cleaned-up and restored to preconstruction conditions, as practicable. Restoration includes implementing temporary and permanent stabilization measures, such as slope breakers, mulching and seeding.

EPND may propose a winter construction schedule to address pipeline construction for approximately 9 miles of expansive wetlands generally located south and east of Clearbrook (from MP 395.0 to 396.0; MP 415.0 to 416.0; MP 460.0 to 462.0; MP 484.0 to 485.0; at MPs 496.5, 520.0, 546.0, and 555.0; and from MP 558.0 to 562.0). EPND has developed winter construction techniques to minimize impacts of conventional wetland construction techniques; these activities are outlined in Section 8.0 of the EPP in Appendix A. In addition, EPND may utilize frost roads to provide a stable winter working platform for pipe fabrication, associated equipment maneuvering, and lowering-in activities.

Figure 1.3-1
Typical Pipeline Construction Sequence

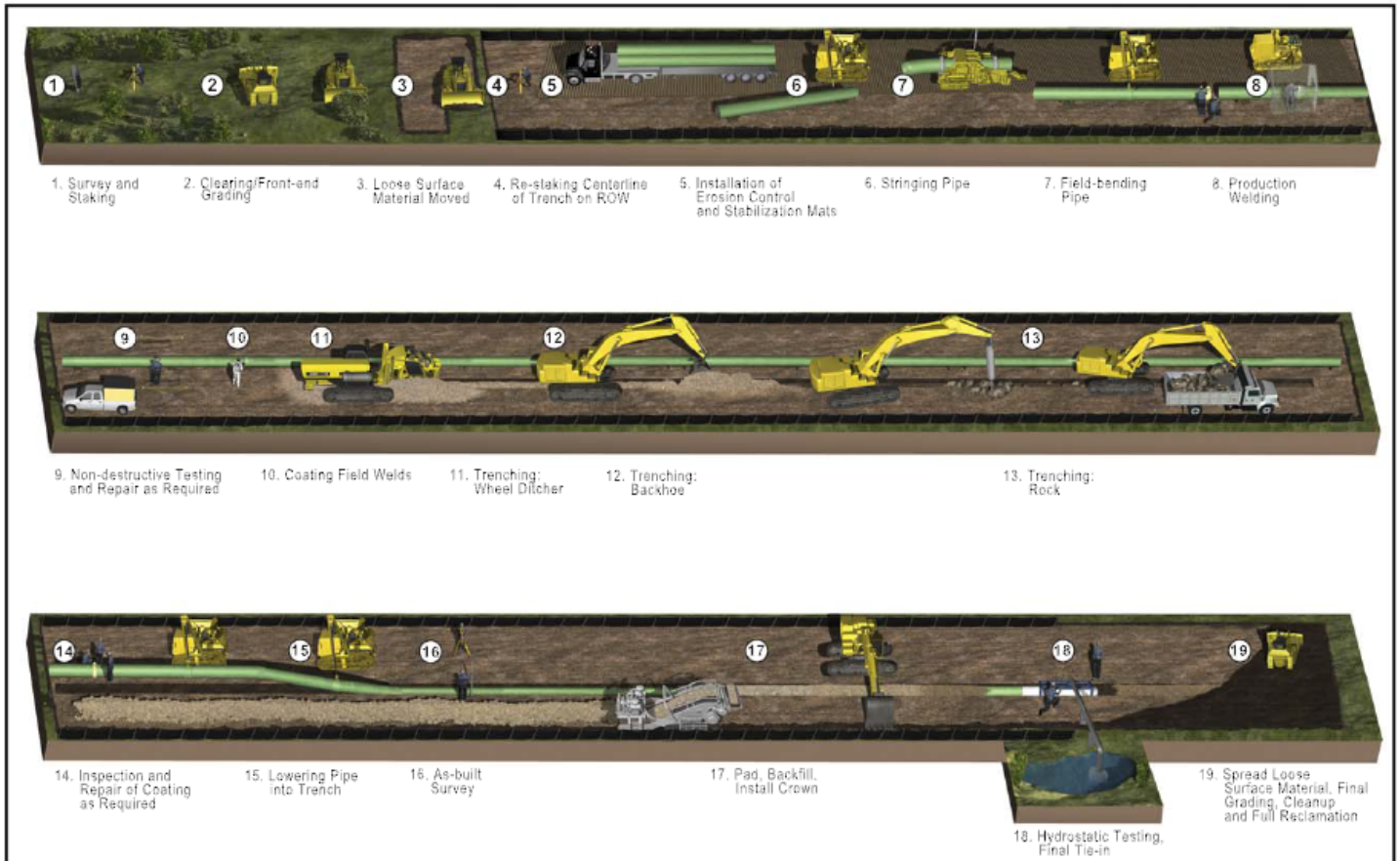

Figure 1.3-1
Sandpiper Pipeline Project
Typical Construction Sequence

1.4 ENVIRONMENTAL MITIGATION AND RESTORATION

EPND has developed a Project-specific EPP which: contains elements of industry and company-wide Best Management Practices for mitigation measures; addresses construction spill prevention, containment, and control; drilling mud releases; noxious and invasive weeds; and restoration/revegetation measures. EPND will implement standardized erosion control and restoration measures to minimize potentially adverse environmental effects resulting from right-of-way preparation, construction, and maintenance of the pipeline. These measures are further described in the Project's EPP, which is provided as Appendix A.

EPND will comply with applicable federal, state, and local rules and regulations, and take all appropriate precautions to protect against pollution of the environment. In addition, EPND will retain Environmental Inspectors ("EI") to verify that environmental protection measures, environmental permit conditions, and other environmental specifications are implemented appropriately by the contractor during construction.