2.0 Description of the Proposed Action and Alternatives

2.1 Introduction

BakkenLink's Project analyzed in this EA consists of constructing approximately 132 miles of 8- and 12-inch-diameter steel crude oil pipeline and associated infrastructure extending from multiple receipt facilities in Billings, Williams, McKenzie, and Stark counties, North Dakota, crossing Lake Sakakawea, to a delivery point interconnect with a rail facility that is being built by Great Northern Midstream LLC near Fryburg, North Dakota, and/or the Beaver Lodge Receipt Facility near Beaver Lodge, North Dakota (**Figure 2-1**). From these facilities, the crude oil collected by the Project would have improved access to key markets across the U.S. BakkenLink is developing and intends to construct, own, and operate the Project.

Construction of the Project would require disturbance of approximately 1,568 acres; an estimated 1,488 acres would be reclaimed immediately following construction. Modifications or improvements, such as the addition of gravel, also may be required on some of the access roads to allow for the passage of construction equipment. Following construction completion, roadways would be returned to pre-construction conditions. **Table 2-1** provides information regarding land requirements for the pipeline, receipt facilities, mainline valves (MLVs), pig launchers/receivers, interconnect facilities, temporary work areas, and access roads as part of the Proposed Action. All disturbances, with the exception of receipt facilities, MLV locations, launcher/receiver facilities, and interconnect facilities, would be reclaimed following construction. Pipelines are expected to have an average design life of 50 years, but can remain viable for fewer or more years, depending upon corrosion and other physical factors.

Table 2-1 Temporary and Permanent Disturbance Acreage Associated with the Project

Project Component	Number	Approximate Length (miles)	Temporary Disturbance (acres)[1]	Permanent Disturbance (acres)
Trunk Line	NA	127	1,318.3	0
Access Roads Needing Improvement[2]	20	11.5	14.1	0
MLVs[3]	11	NA	0[4]	0.25
Additional Temporary Work Spaces	258	NA	36.2	0
Subtotal			**1,368.6**	**0.25**
Laterals	3			
Arrow Midstream	NA	1.3	13.9	0
Dunn	NA	0.14	1.7	0
Belfield	NA	3.7	43.4	0
Access Roads		0.1	0.1	0
Additional Temporary Work Spaces	15	NA	0.9	0

Table 2-1 Temporary and Permanent Disturbance Acreage Associated with the Project

Project Component	Number	Approximate Length (miles)	Temporary Disturbance (acres)[1]	Permanent Disturbance (acres)
Lateral Interconnects				
Arrow Midstream[6,7]	1	NA	0[4]	0.17
Dunn	1	NA	0[5]	0[5]
Belfield[6,7]	1	NA	0[4]	0.17
Subtotal			**59.0**	**0.34**
Receipt Facilities	**6**			
Beaver Lodge[6]	NA	NA	0	10.0
Keene	NA	NA	0	10.0
Arrow Midstream (constructed by others)[6]	NA	NA	0	0
Watford City[6]	NA	NA	0	39.1
Dunn[6]	NA	NA	0	20.5
Belfield (constructed by others)[6]	NA	NA	0	0
Subtotal				**79.7**
Pipe Yards	**3**			
Arrow Midstream	NA	NA	18.0	0
Watford City	NA	NA	12.4	0
Dunn	NA	NA	30.2	0
Subtotal			**60.7**	**0**
Total Surface Disturbance			**1,487.8**	**80.2**

[1] Typical temporary construction ROW width would be 100 feet, except on USFS land, where it would be limited to 50 feet. Additional locations, such as wooded areas and wetlands, would be narrowed to 50 feet to minimize surface disturbance and impacts. Surface disturbance may be slightly wider on side hill locations and narrower on flat terrain.

[2] Represents existing two-track access roads that would require improvement with the addition of gravel.

[3] BakkenLink is proposing a total of 11 MLVs. Two of them would be located within the fenced interconnect facilities at the Arrow Midstream and Belfield Interconnects, and have not been numbered.

[4] MLVs and lateral interconnect facilities would be located entirely within the construction ROW; therefore, this disturbance has already been accounted for in the trunk line temporary disturbance acreage.

[5] The Dunn Interconnect is composed of an underground “Y” connection to the trunk line. No aboveground facilities would be required for this interconnect.

[6] A pig launcher and/or receiver also would be located within this facility.

[7] A MLV also would be located within this facility.

NA = Not applicable.

Construction of the Project is scheduled to begin upon receipt of BLM's Notice to Proceed; anticipated to be in the mid to late October 2012 timeframe.

2.2 Proposed Action

BakkenLink proposes to construct approximately 132 miles of 12-inch-diameter (Trunk line, Dunn, and Arrow Midstream Laterals) and 8-inch-diameter (Belfield Lateral) steel crude oil pipeline extending from the Beaver Lodge Oil and Gas Field area near Tioga, North Dakota, to a proposed crude oil rail loading facility located near Fryburg, North Dakota, proposed by Great Northern Midstream LLC. The Project would be located in the following North Dakota counties: Billings, McKenzie, Stark, and Williams. The system would transport light sweet crude, typical of Bakken production. The initial capacity would be 65,000 bpd, beginning on the estimated in-service date of December 31, 2012. BakkenLink would transport crude oil from six receipt facilities, including two existing (Arrow Midstream and Belfield) and four new proposed (Beaver Lodge, Keene, Watford City, and Dunn) crude oil receipt locations. The Trunk line would have bi-directional capability and, from the Fryburg rail terminal facility and Beaver Lodge Receipt Facility, the crude oil collected by the Project would have improved access to key markets across the U.S. Construction of the Project would help to alleviate anticipated pipeline constraints in the oil production area of the Project and reduce the amount of truck traffic for hauling crude oil from the lease to receipt facility locations.

2.2.1 Description of Facilities

The Project would be designed, constructed, and operated in compliance with applicable portions of the USDOT regulations as set forth in 49 CFR Part 195, Transportation of Hazardous Liquids by Pipeline. These regulations encompass general requirements, accident reporting and safety related condition reporting, design requirements, construction, pressure testing, operation and maintenance, qualification of pipeline personnel, and corrosion control. Relevant industry standards are incorporated into these regulations by reference, including those of the American Petroleum Institute (API), American Society of Mechanical Engineers, the American Standard for Testing and Materials, and others.

The proposed route would extend from six receipt facilities in Billings, McKenzie, Stark, and Williams counties, North Dakota, to the Great Northern Midstream LLC rail facility near Fryburg, North Dakota. An overview of the proposed route was previously provided in **Figure 1-1**. Major components of the Project include:

- Approximately 127 miles of 12-inch-diameter steel Trunk line for the transportation of crude oil between the Beaver Lodge Receipt Facility on the north end of the system and the rail terminal facility on the south end. This Trunk line would have bi-directional capability and would deliver crude oil to the Fryburg rail terminal facility and to and from the Beaver Lodge Receipt Facility.
- Approximately 1 mile of 12-inch-diameter steel lateral from the existing Arrow Midstream Receipt Facility, which would deliver crude oil into the trunk line near the crossing of Highway 73.
- Approximately 0.1 mile of 12-inch-diameter steel lateral from the Dunn Receipt Facility, which would deliver crude oil into the trunk line south of the crossing of Highway 200.
- Approximately 4 miles of 8-inch-diameter steel lateral from Belfield Receipt Facility, which would deliver crude oil into the trunk line just north of Belfield.
- Six receipt facilities would be used (two existing) or constructed (four proposed) for input of crude oil into the pipeline system.

2.2.1.1 Pipeline Facilities

The proposed routes would traverse private, state, and federal lands. Approximately 120.8 miles (91.5 percent) of the proposed routes would be on private lands, 2.3 miles (1.2 percent) on state lands, and 9.6 miles (7.3 percent) on federal lands (6.8 miles on USFS lands and 2.8 miles on/across USACE lands and water). Land ownership along the proposed route is illustrated on **Figure 2-1**.

The 12-inch-diameter trunk line and laterals are designed for an initial flow rate of 65,000 bpd; the 8-inch-diameter Belfield Lateral is designed for an initial flow rate of 15,000 bpd. The maximum design flow rate of the 12-inch-diameter trunk line and laterals is 85,000 bpd, while the maximum design flow rate of the 8-inch-diameter lateral is 20,000 bpd. The pipeline would be buried underground. The pipeline is designed for a maximum temperature rating of 120 degrees Fahrenheit (°F) and a maximum operating pressure of 1,480 pounds-force per square inch gauge (psig). The Project would typically operate at 60°F and between 200 to 1,480 psig. The proposed origin, terminus, and pipe size of the proposed segments are summarized in **Table 2-2**.

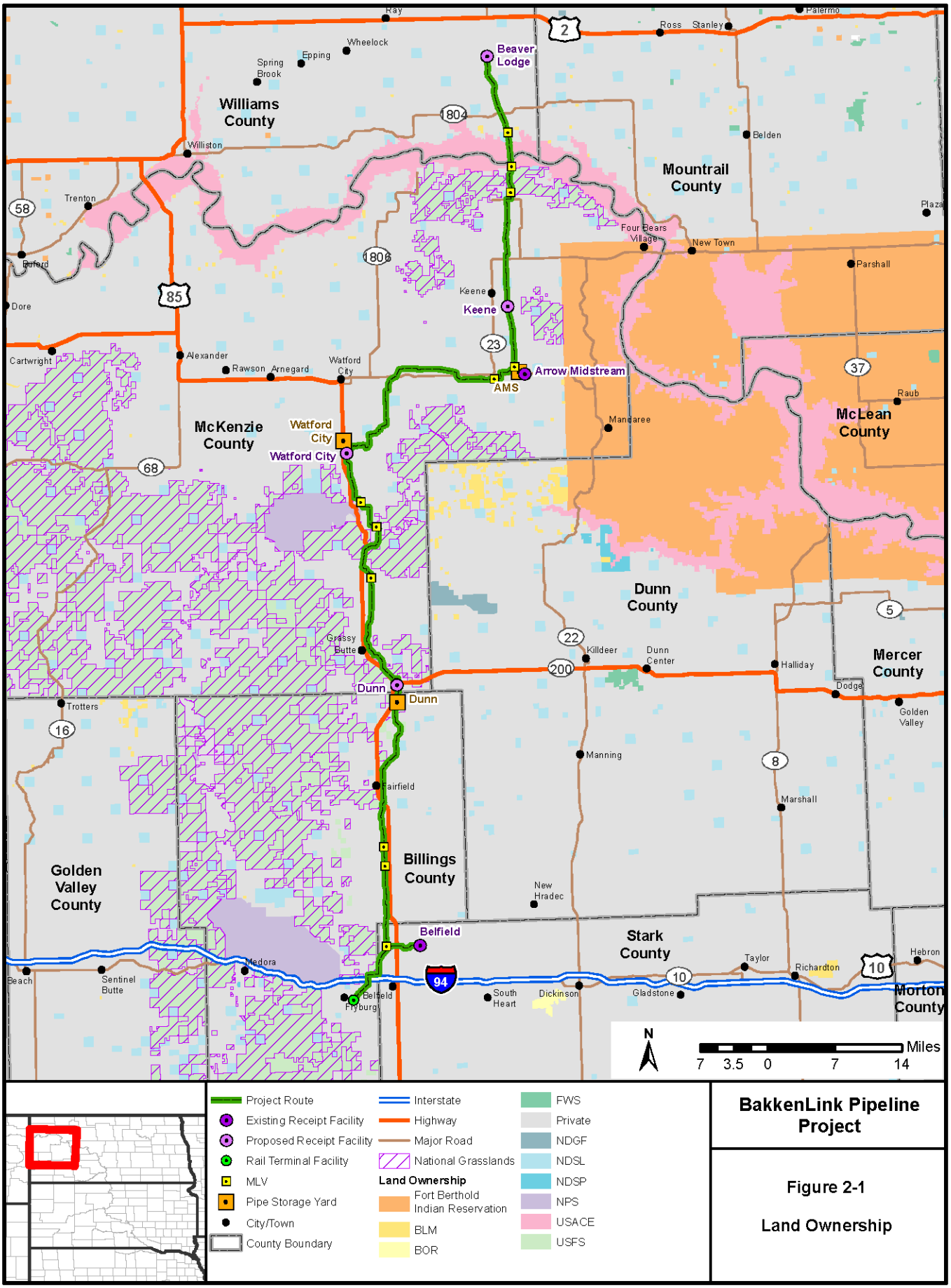
Table 2-2 Summary of Pipeline Segments

Origination	Terminus	Pipe Specification
Beaver Lodge Receipt Facility	Fryburg Rail Terminal Facility (to be constructed and owned by others)	12.75-inch outside diameter (OD) X 0.250-inch wall thickness (WT), API 5L-X65 - Line Pipe 12.75-inch OD X 0.292-inch WT, API 5L-X65 – horizontal direction drilling (HDD)/Bore Pipe
Arrow Midstream Receipt Facility (constructed and owned by others)	Trunk line	12.75-inch OD X 0.250-inch WT, API 5L-X65
Dunn Receipt Facility	Trunk line	12.75-inch OD X 0.250-inch WT, API 5L-X65
Belfield Receipt Facility (constructed and owned by others)	Trunk line	8.625-inch OD X 0.219-inch WT, API 5L-X65

2.2.1.2 Receipt Facilities

Six receipt facilities would be associated with the Project, two of which are existing facilities constructed by Arrow Midstream (Arrow Midstream Receipt Facility) and Marathon (Belfield Receipt Facility) (**Figure 2-1**). All six receipt facilities would allow for input of crude oil by other companies into the proposed pipeline. **Table 2-3** summarizes the milepost (MP) locations for the receipt facilities and the rail terminal facility being constructed by Great Northern Midstream LLC.

Receipt facilities would be connected (via either a “Y” in the trunk line or a lateral pipeline) to the trunk line and would provide connection to a truck terminal or other third-party facilities. The pressure provided by input at the receipt facilities would be adequate for operation of the pipeline at the initial projected flow rates. Truck unloading facilities, Lease Automatic Custody Transfer units, meter skids, line pumps, can pumps, and storage tanks would be included in the receipt facilities, a typical drawing of which is provided in **Figure 2-2**.



BakkenLink Pipeline Project

Figure 2-1

Land Ownership

Table 2-3 Receipt Facilities and Rail Terminal Facility Locations by Milepost

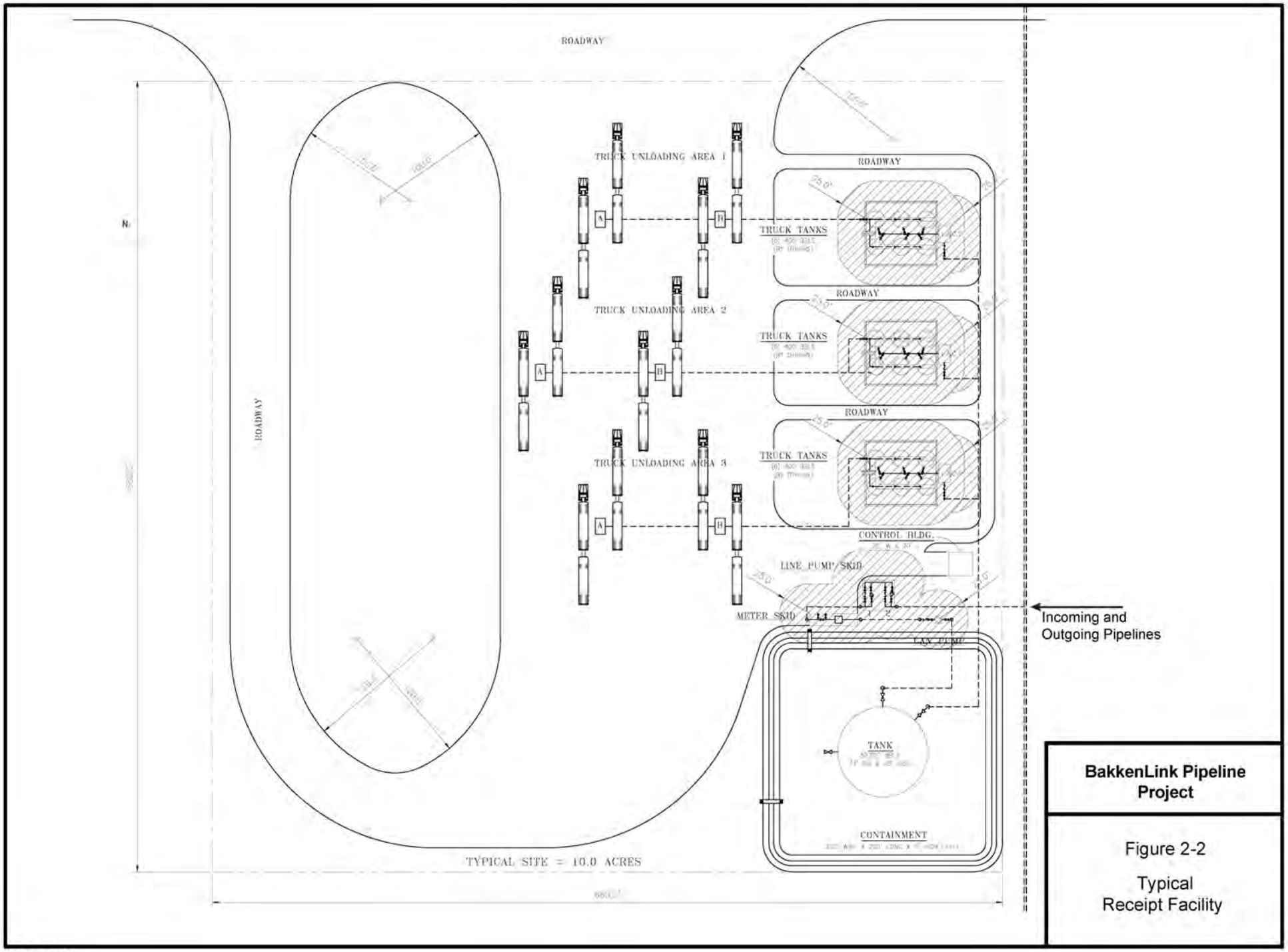
Location	Approximate MP
Beaver Lodge Receipt Facility	Trunk line MP – 0
Keene Receipt Facility	Trunk line MP – 27.5
Arrow Midstream Receipt Facility (Existing Facility)	Arrow Midstream Lateral MP – 0
Watford City Receipt Facility	Trunk line MP – 61.2
Dunn Receipt Facility	Dunn Lateral MP – 0
Belfield Receipt Facility (Existing Facility)	Belfield Lateral MP – 0
Rail Terminal Facility (Great Northern Midstream LLC Facility)	Trunk line MP – 127.1

Power would be required to serve the receipt facilities listed in **Table 2-3**. Of the six receipt facilities serving the pipeline, sufficient onsite power is already available at the existing Arrow Midstream and Belfield Receipt Facility locations. For the Watford City, Dunn, Keene, and Beaver Lodge Receipt Facilities, new offsite power sources would be required. According to BakkenLink, for all four of these remaining receipt facility locations, power sources capable of serving them are located in close proximity in the form of existing power lines or substations. For each of the remaining four receipt facilities currently without power, a maximum of 0.25 mile of new electrical lines would be required, resulting in a total of less than 1.0 mile of new electrical lines. The Dunn and Watford City Receipt facilities would require overhead lines to provide power for a combined total of less than 0.5 mile of additional overhead line. The Keene and Beaver Lodge Receipt facilities would require underground lines to provide power to the sites for a combined total of less than 0.5 mile of additional underground lines. These additional required electrical facilities would be permitted, constructed, and operated by local and/or regional electrical providers.

2.2.1.3 Other Aboveground Facilities

BakkenLink indicates that sufficient pressure would be provided from the pumps within the receipt facilities such that no separate pump stations would be built as part of the Project. The pressure provided by input at the receipt locations through delivery pumps would be adequate for operation of the pipeline at the initial projected flow rates.

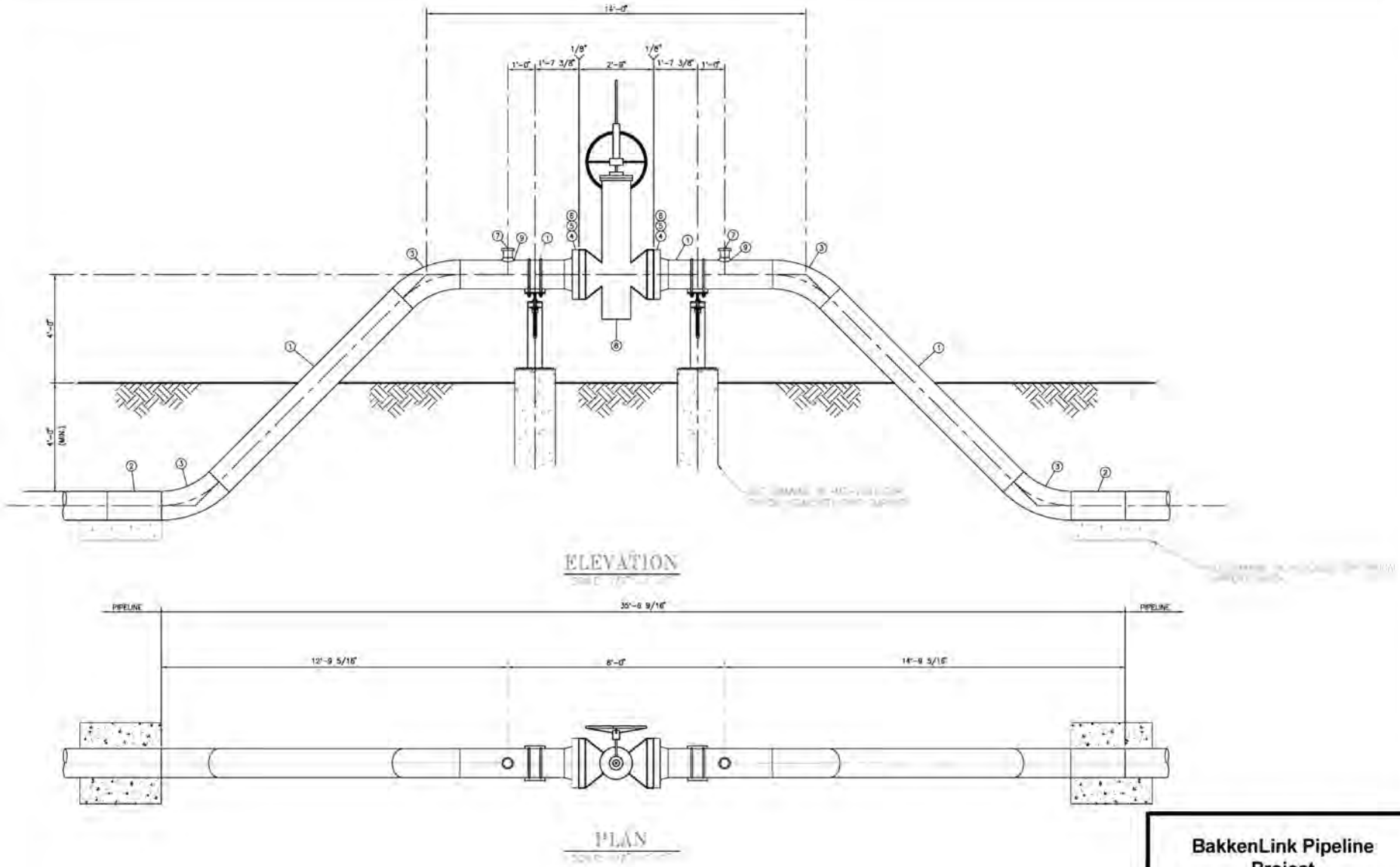
Eleven MLVs would be spaced along the pipeline to meet or exceed the requirements of 49 CFR, Part 195. BakkenLink has conducted a high consequence area (HCA) analysis to identify locations of HCAs (Section 2.2.2) near the Project, which helped to refine appropriate placement of the MLVs to minimize potential environmental impacts in the event of a rupture or leak. BakkenLink also has met with the PHMSA to optimize MLV placement along the trunk line and gain their concurrence with MLV locations. Additionally, BakkenLink would install communications equipment (Section 2.2.1.5) that would allow certain valves to be operated remotely to minimize potential impacts of a spill. BakkenLink has indicated its intent to install remotely controlled MLVs on both sides of Lake Sakakawea, Little Missouri River, and Green River, as well as on the perimeter of USFS property. MLVs would be located within 30-foot by 40-foot, fenced and graveled enclosures, except where they are collocated with the lateral interconnect facilities at the Arrow Midstream Lateral Interconnect and the Belfield Lateral Interconnect. Plan and profile views of a typical MLV are shown in **Figure 2-3**. MLV locations by MP are provided in **Table 2-4**.



BakkenLink Pipeline Project

Figure 2-2

Typical Receipt Facility



BakkenLink Pipeline Project

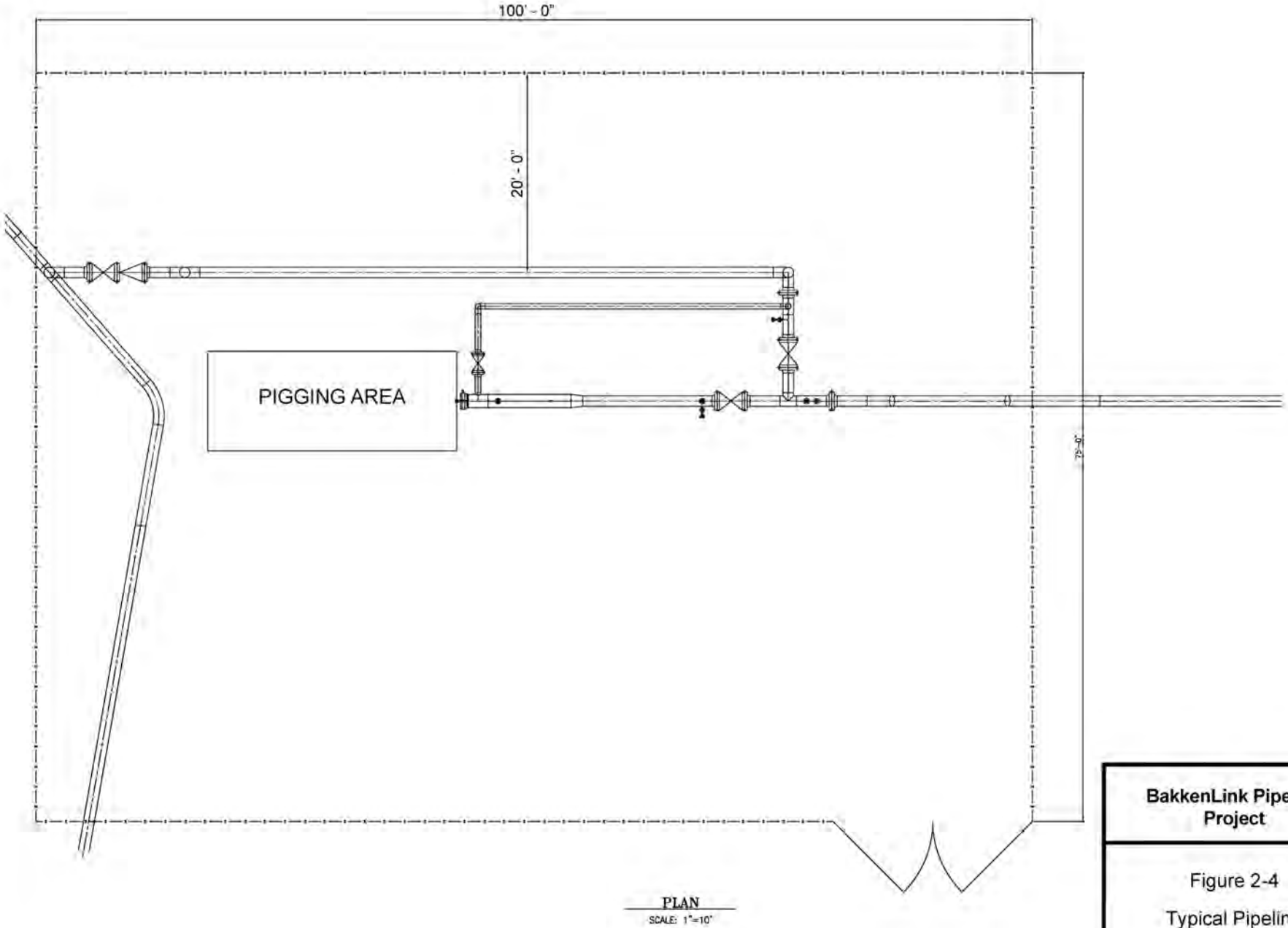
Figure 2-3

Typical Mainline Valve

Table 2-4 Mainline Valve and Pig Launcher/Receiver Locations by Milepost

Location	Approximate MP
Pig launcher located within the Beaver Lodge Receipt Facility	Trunk line MP – 0
MLV 1	Trunk line MP – 8.5
MLV 2	Trunk line MP – 12.1
MLV 3	Trunk line MP – 15.0
MLV and pig receiver located within the Arrow Midstream Lateral Interconnect Site	Trunk line MP – 34.0 Arrow Midstream Lateral MP – 1.3
Pig launcher (installed by others) located within the existing Arrow Midstream Receipt Facility	Arrow Midstream Lateral MP – 0
MLV 4	Trunk line MP – 37.0
Pig launcher and receiver located within the Watford City Receipt Facility	Trunk line MP – 61.2
MLV 5	Trunk line MP – 67.0
MLV 6	Trunk line MP – 70.8
MLV 7	Trunk line MP – 77.8
Pig launcher located within the Dunn Receipt Facility	Dunn Lateral MP – 0
MLV 8	Trunk line MP – 109.0
MLV 9	Trunk line MP – 111.1
MLV and pig receiver located within the Belfield Lateral Interconnect Site	Trunk line MP – 119.5 Belfield Lateral MP – 3.7
Pig launcher (installed by others) located within the existing Belfield Receipt Facility	Belfield Lateral MP – 0
Pig receiver (installed by others) located within the Great Northern Midstream LLC Rail Terminal Facility	Trunk line MP – 127.1

Pig launchers and/or receivers would be located within all but one (Keene) of the receipt facilities, at the rail terminal facility, and at two (Arrow Midstream and Belfield) of the three lateral interconnect sites to allow for periodic internal pipeline inspections and cleaning. Pig launcher and receiver locations are provided in **Table 2-4**. The Arrow Midstream and Belfield Lateral Interconnect sites would provide connections of the lateral pipelines to the trunk line and would include pig receivers, MLVs, and other aboveground appurtenances enclosed in a 75-foot by 100-foot fenced and graveled area (**Figure 2-4**). The Dunn Lateral Interconnect is composed of a simple, belowground “Y” connection, and no aboveground facilities would be required at this location.



BakkenLink Pipeline Project

Figure 2-4

Typical Pipeline Interconnect Site

Additional aboveground facilities would be limited to cathodic test stations (Section 2.2.1.5) and pipeline markers. Pipeline markers would be installed at line-of-sight intervals and at crossings of roads and other key points (as required by 49 CFR Part 195) to show the location of the pipeline. Markers would identify the owner of the pipeline and convey emergency contact information. Because pipelines are normally buried underground, markers are used to show the approximate, not exact, location of the pipeline. Special markers providing information and guidance to aerial patrol pilots also would be installed. In order to further minimize the risk of accidental damage from third-party trenching, drilling, or other excavation activities, BakkenLink would subscribe to the state One Call system.

2.2.1.4 Storage, Staging, and Access

In addition to the construction ROW, additional temporary work space, and permanent aboveground facilities, BakkenLink also would require other areas for pipe storage, construction equipment staging, and contractor offices. BakkenLink has proposed to use three pipe storage yards along the route as shown in **Table 2-1** and on **Figure 2-1**. Any additional pipe storage, equipment staging, or contractor office needs would be located at existing contractor facilities or at the receipt facilities.

BakkenLink has indicated that all construction vehicles and equipment traffic would be confined to roads and trails open for public travel, private roads acquired for Project use, and the construction ROW. BakkenLink has made an initial determination of access roads that would be required for use during construction, as well as existing two-track roads that would require upgrading. BakkenLink has identified a total of 20 existing, two-track access roads that would require gravelling prior to use during construction (POD, Appendix XIII, Access Road and Improvements Table). Additionally, of the 87 roads that would be crossed by the trunk line and laterals (POD, Appendix XXII, Road Crossings and Methodology), BakkenLink has indicated that a total of 18 additional, improved private roads would be requested for use during construction to access the ROW. BakkenLink also may request access to the ROW via other roads or highways that are crossed, if permitted by the road/highway authority. BakkenLink has not identified the need to construct any new temporary access roads for use during construction. There would be no improvements made on any USFS roads. The two-track road east of Summit Campground (approximate MP 74) could be utilized if BakkenLink is unable to stay within the construction ROW. If they do use the road, they would use timber mats to minimize soil compaction and erosion and eliminate the need for upgrading the road.

All construction-related access roads to the ROW would be marked with signs. Any private roads not to be used during construction also would be marked. BakkenLink would offer landowners or land managing agencies the installation and maintenance of access deterrent features to control unauthorized vehicle access to the construction ROW, where appropriate. On federal lands, all travel management would be in accordance with applicable travel management plans. Access deterrent features may include the following, unless otherwise approved or directed by BakkenLink and relevant government authority based on site specific conditions or circumstances:

- Signs;
- Fences with locking gates;
- Slash and timber barriers, pipe barriers, or boulders lined across the construction ROW; and
- Planting conifers or other appropriate trees or shrubs across the construction ROW.

2.2.1.5 Supervisory Control and Data Acquisition System

Supervisory control and data acquisition (SCADA) system communications would be provided through satellite systems requiring only a small dish installed within the fenced MLV areas. Pressures and flow rates would be monitored at a central location 24 hours a day and 7 days a week. The SCADA system would alert operations personnel to abnormal operating conditions and allow them to respond promptly, including shutdown of the system in the event of a leak or other appropriate circumstance. Additionally,

the communications equipment would be installed allowing some of the MLVs to be operated remotely to minimize any potential impacts of a spill. Currently, BakkenLink plans to install remotely controlled MLVs on both sides of Lake Sakakawea, the Little Missouri River, and the Green River, as well as on the perimeter of USFS property. Any additional remotely controlled valves that may be installed would be dependent upon operator locations, response times, and protocols based on additional consultation with PHMSA.

2.2.1.6 Corrosion Protection

Specialized coating for underground pipelines and a cathodic protection system would be utilized to prevent external corrosion. An impressed current style cathodic protection system would be installed on the pipeline. Rectifiers and deep well anode beds would be installed at approximately 15-mile intervals. The exact locations would be confirmed with geotechnical testing and availability of commercial electrical power. The deep well anodes would have a minimum 20-year life and the assembly would be designed to allow the anodes to be replaced at the end of the design life to extend the operational life of the pipeline, which is expected to be approximately 50 years. The rectifiers would be sized to allow sufficient adjustment to compensate for varying conditions. In accordance with 49 CFR, Part 195, the rectifiers would be inspected at least six times per calendar year. Cathodic test stations would be located at approximately 1-mile intervals. The pipeline potential would be recorded at every test station every calendar year. A close interval survey, providing a pipeline potential measurement every 3 feet, would occur every 7 years, or more frequently in critical areas. Rectifiers would be located near valve sites with power distribution available in close proximity and mounted on a pole adjacent to the ROW; associated anodes would be buried. Cathodic protection anode beds would be constructed within the permanent ROW.

2.2.2 Environmental Protection Measures as Design Features of the Project

BakkenLink has committed to specific environmental protection measures as part of the Project design to minimize potential impacts to natural and human resources during construction and operation. These protection measures are summarized by resource in **Table 2-5**. The temporary construction ROW would be reduced in wooded and wetland areas, as necessary, to avoid impacts to these environmentally sensitive areas. The construction ROW also would be reduced to 50 feet in width across all USFS lands.

BakkenLink has conducted a HCA location analysis for the Project to help determine appropriate placement of the valves during final design. HCAs are PHMSA-defined locations where the potential impacts resulting from a spill are expected to be greater than in other locations. HCAs include populated areas, unusually sensitive areas, and commercially navigable waterways (49 CFR Section 195.450). PHMSA has identified HCAs throughout the U.S. and these data are available to pipeline operators and federal agencies through PHMSA's National Pipeline Mapping System (National Pipeline Mapping System 2006). At a minimum, the valve spacing specified at 49 CFR, Part 195 would be required, but additional valves may be needed to satisfy the needs of PHMSA to further minimize potential environmental effects. BakkenLink also has met with PHMSA to confirm the current location of the MLVs, as appropriate. Additional meetings with PHMSA would be scheduled to reevaluate any additional MLVs and the need for any additional remotely controlled valves.

The results of the HCA study are documented in an appendix to the Spill Risk Assessment, which has been provided to the BLM, USFS, and USACE for review. As required by 49 CFR, Section 195.452(i) and enforced by the PHMSA, BakkenLink would conduct a more detailed risk assessment in compliance with these regulations. While the Spill Risk Assessment is sufficient to support the preparation of the EA, BakkenLink's analysis would be based on the final alignment. Throughout the life of the Project, BakkenLink would continue to be responsible for considering the specific circumstances of its pipeline in the vicinity of HCAs. Further, the PHMSA would ensure BakkenLink's compliance with 49 CFR, Section 195.452(i) regulations, including the Integrity Management Rule, and would review the technical basis for the risk assessment's assumptions during integrity management inspections. The Integrity

Management Rule specifies regulations to assess, evaluate, repair, and validate the integrity of hazardous liquid pipelines that, in the event of a leak or failure, could affect HCAs.

Table 2-5 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures As Design Features
Air Quality	• Water or chemical soil binders and best management practices (BMPs) would be used to control dust along the ROW and access roads during construction in accordance with federal, state, and local requirements.
Soils	• Soil erosion would be minimized by implementing procedures described in BMPs, the Storm Water Pollution Prevention Plan (SWPPP), and the Reclamation Plan.
	• **During periods when soils are excessively wet**, vehicle traffic and equipment would be restricted to prevent rutting in areas where topsoil is intact (excluding areas where topsoil has been removed/segregated).
	• Use of temporary roads across agricultural lands may result in some compaction and seasonal loss of crops. When necessary, compacted soils would be disked following Project completion and landowners would be compensated for any crop loss.
Water Resources and Wetlands	• The SWPPP and BMPs would be implemented to minimize storm water transport of sediment from disturbed areas to streams and wetlands. All Project-related storm water and hydrostatic test water discharges would be in compliance with a NPDES permit.
	• No aboveground facilities or staging areas would be constructed within wetlands, riparian areas, or other waters of the U.S.
	• Biologists familiar with wetland and riparian identification would post signs at the edges of the wetland/waterbody features prior to construction.
	• ATWSs would be located a minimum of 50 feet outside wetland boundaries. BMPs (including installation of erosion control devices) would be utilized at all wetland and waterbody crossings to minimize sedimentation. For areas where additional setbacks are deemed necessary to protect the resource, the applicability of the appropriate setback would be determined in consultation with agencies on a site-specific basis.
	• No refueling or lubricating would occur within 100 feet of wetlands and/or perennial/intermittent waterbodies. Hazardous materials, chemicals, fuels, etc. would not be stored within 100 feet of wetlands or perennial/intermittent waterbodies.
	• Application of herbicides or pesticides within the vicinity of wetlands and waterbodies would follow pesticide use protocol and restrictions outlined in the Noxious Weed Management Plan.
	• For dry crossings, topsoil within the trench line shall be segregated from subsoil in wetland and riparian areas for use in reclamation as specified in the Construction, Mitigation, and Reclamation Plan (CMRP).
	• Where crossings of riparian or wetland areas cannot be reasonably avoided, the construction ROW width would be reduced to approximately 50 feet and measures would be taken to minimize impacts. This reduction to the construction ROW would apply to all Waters of the U.S. crossings.
	• To control Aquatic Invasive Species (AIS), equipment would be washed to remove all vegetative matter and AIS after constructing through stream crossings. where water is evident within the channel.

Table 2-5 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures As Design Features
Water Resources and Wetlands (Continued)	• BakkenLink would avoid impacts to perennial streams by using the HDD crossing method where required. Construction would occur over a limited period of time with the minimum equipment required for safe and efficient operations. Direct access of vehicles and heavy machinery to waterbodies would be minimized.
	• The HDD crossing method would be used at the **locations provided in Table 2-7**, which would avoid in-stream impacts and reduce erosion along the banks of the waterbodies.
	• Water used for hydrostatic testing, dust control during construction, etc. would be obtained from municipal or other permitted water supply wells. The installation or abandonment of any wells is not anticipated. Surface water or groundwater appropriation is not anticipated.
	• If Section 404 permit is obtained and mitigation is required, mitigation areas would need to be monitored for a minimum of five years. Annual reports would have to be submitted to the ND Corps regulatory office. Successful performance criteria would need to be developed in a mitigation and monitoring plan that should be submitted with completed 404 permit application. ND Corps regulatory should be able to provide more guidance.
Vegetation	• Revegetation seed mixes would be developed in coordination with the agencies and private landowners. The CMRP would outline the procedures to be followed to return the land to pre-existing vegetative cover and land uses.
	• Trees and shrubs would be replaced in accordance with the PSC's tree and shrub mitigation specifications. BakkenLink would coordinate with the appropriate agencies to identify efficient restoration and mitigation measures following construction.
	• ROW monitoring of **reclaimed areas** would be conducted **annually for 5 years** following reclamation**.** Reclamation success would be based on the revegetation to 70 percent of the background cover as stipulated in the SWPPP **(North Dakota Department of Health, Water Quality Division requirement)** and the applicable permits obtained. **If, after the first growing season, revegetation is successful, no additional monitoring would be conducted. Reclamation success criteria would be established in coordination with the USFS and USACE.**
Noxious Weeds	• The Project's Noxious Weed Management Plan would be implemented to minimize the spread of noxious weeds. A Pesticide Use Proposal (PUP) would be included in the Noxious Weed Management Plan.
	• **BakkenLink would clean construction equipment after completion of construction activities in the Summit Campground area, to prevent the spread of invasive species (e.g., smooth brome) to adjacent areas.**
	• ROW monitoring for noxious weeds **and invasive species** would be conducted **following reclamation** in conjunction with ROW monitoring of reclamation success.
	• **When treating for noxious weeds and invasive species inside USFS recreation sites (e.g., Summit Campground), BakkenLink or their subcontractor would be responsible for providing public notice at least 24 hours in advance of treatment. BakkenLink would notify USFS, and post notice on campsite bulletin boards with information on the product being used, dates of spraying, and contact numbers.**

Table 2-5 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures As Design Features
Wildlife and Fisheries	• Appropriate wildlife and fisheries protection measures would be implemented during all phases of construction in coordination with jurisdictional agencies.
	• BMPs for protection of water resources that would reduce potential impacts to fish and their habitat would be implemented.
Special Status Species	• Prior to the initiation of construction, applicable biological surveys would be conducted through areas of suitable habitat for specific species during the appropriate season, as determined by the jurisdictional agencies (e.g., BLM and USFWS) and survey results reported in compliance with Section 7 of the ESA.
	• If threatened, endangered, candidate, or sensitive plant species are identified in proposed disturbance areas prior to construction, appropriate protection measures would be determined in consultation with agencies.
	• No construction, operation, or maintenance activities would be allowed within 0.25 mile of the identified sharp-tailed grouse leks on USFS-administered land during the breeding season **(March 1 to June 15).**
	• Surface use is prohibited from March 1 through June 15 within 1 mile (line of sight) of a sharp-tailed grouse display ground.
	• No surface occupancy or use is allowed within 0.25 mile (line of sight) of a sharp-tailed grouse and sage grouse display ground.
	• If a whooping crane is sighted within 1 mile of pipeline or associated facilities while under construction, all work cease within 1 mile of the Project and the USFWS be contacted immediately (USFWS 2011). In coordination with the USFWS, work may resume after the bird(s) leave the area (USFWS 2011).
Land Use	• Any range improvements such as fences, gates, cattle guards, and developed water sources located within disturbance or access routes would be repaired to the satisfaction of the agency or private landowner.
	• If construction would disturb or destroy a natural barrier used for livestock control, the opening would be temporarily closed during construction and permanently closed following construction, as required by the agency or private landowner.
	• BakkenLink would coordinate with landowners to minimize impacts to their lands. Lands would be restored to cropland and farming use following the construction phase of the Project.
Recreation and Visual Resources	• Measures would be implemented to minimize the visual effects of construction on high value road, river, and trail crossings as identified **in the ROW permit and POD.**
	• To prevent unauthorized use of the ROW by off-road vehicles and subsequent potential impacts to soil, vegetation, and wildlife resources, access would be blocked at locations specified by agencies and /or private landowners.

Table 2-5 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures As Design Features
Transportation	• All major highway crossings would be bored to limit traffic interruptions.
	• Un-paved roads would be open cut, subject to approval of local road authorities. Where roads are open cut, traffic would be temporarily directed around the site. Most road crossings would typically be completed within several days, which would limit any disturbance to the traffic flow.
	• Placement of temporary access would be designed to avoid sensitive features such as wetlands. Areas used for temporary roads or working areas during construction would be restored to their original condition to the extent practicable.
	• The USFS designated **inventoried R**oadless **A**rea would be crossed using the HDD method. No construction traffic would be allowed to access this property.
Cultural and Paleontological Resources	• Prior to the Project construction, cultural resource inventories would be conducted on all previously uninventoried lands in proposed disturbance areas. Any resources that have been determined as eligible or are included in the NRHP would be avoided to the extent practical. If avoidance is not possible, appropriate mitigation measures would be implemented.
	• **Avoidance is recommended for the NRHP-eligible sites (including unevaluated sites) located within or adjacent to the Area of Potential Effect (APE). If avoidance of an unevaluated site is not feasible, evaluative testing would be conducted and eligibility determined by the BLM in consultation with the North Dakota State Historic Preservation Office. For any NRHP-eligible sites that cannot be avoided, a treatment plan would be developed by the BLM in consultation with the North Dakota SHPO and interested tribes.**
	• To minimize indirect impacts to cultural and paleontological resources, Project-related personnel would be educated as to the sensitive nature of the resources; a strict policy of prohibiting collecting of these resources would be implemented.
	• If cultural resources are found while Project is under construction, all work would stop and the ND SHPO would be contacted to determine what should be done to protect resources. Written permission shall be obtained stating that work in this area no longer presents a hazard to cultural resources and work can resume.
Noise	• The Project route would be at least 500 feet from occupied houses and structures. At this distance, noise created during construction should be below ambient background levels, especially near highways and railroad lines.
Public Safety	• The Project would be located a minimum distance of 500 feet from residences to minimize hazards to human health and safety. Also, isolation valves would be installed along the pipeline in accordance with federal regulations to isolate the pipeline during a leak to minimize the release.
	• A Spill Risk Assessment **has been** completed to identify HCAs and potential impacts as a result of an accidental release of crude oil during pipeline operation.

2.2.3 Construction

BakkenLink's facilities would be designed, constructed, tested, operated, and maintained in accordance with applicable requirements of the USDOT regulations in 49 CFR, §195, United States Department of Labor regulations, Occupational Safety and Health Administration (OSHA) requirements, and other applicable federal and state regulations, such as PHMSA regulations. These regulations are intended to ensure adequate protection for the public and to prevent crude oil pipeline accidents and failures. Among other design standards, 49 CFR, §195 specifies pipeline material selection; minimum design requirements; protection from internal, external and atmospheric corrosion; and qualification procedures for welding and operations personnel.

2.2.3.1 Safety Requirements and Environmental Inspection

BakkenLink and its contractors would undergo prevention, response, and safety training. The program would be designed to improve awareness of safety requirements, pollution control laws and procedures, and proper operation and maintenance of equipment.

As part of the construction mobilization activities, a pre-construction safety coordination meeting would be held at each spread or project work location by BakkenLink. Designated BakkenLink Project Management personnel would attend these sessions with the contractor superintendent, foremen, and safety representative(s). The agenda of this meeting would address any specific contractor and/or BakkenLink concerns and expectations, safety initiatives, review the safety compliance program, incident reporting, and established protocols for determining, correcting, and documenting safety non-compliance incidents. In addition, this meeting would include expectations in terms of compliance enforcement and accountability.

After the pre-mobilization safety and environmental orientation, the contractor would conduct safety and environmental orientation for all personnel and visitors prior to granting access to any portion of the construction ROW. The contractor would keep a log of all personnel receiving safety and environmental orientation. All work would be conducted in compliance with the contractor's safety plan and procedures as approved by BakkenLink. In addition, all work would be conducted in compliance with the terms and conditions of the approved ROW permit, which would include reasonable and necessary environmental protection measures.

The contractor and associated subcontractors would ensure that persons engaged in Project construction are informed of the construction and environmental requirements and that they attend and receive training regarding these requirements as well as all laws, rules, and regulations applicable to the work. Prior to construction, all Project personnel would be trained on environmental permit requirements and environmental specifications, including fuel handling and storage, cultural resource protection methods, stream and wetland crossing requirements, and sensitive species protection measures.

The Contractor would provide, at a minimum, one qualified and experienced safety representative and three personnel trained in emergency management for each construction spread. BakkenLink would provide a minimum of two environmental inspectors per spread to ensure that construction activities are compliant with the permit-approved environmental mitigation and reclamation requirements specified in all permits and this document.

Construction activities would be carried out during daylight hours unless approved by BakkenLink. Burning along the ROW would be controlled and be in accordance with local permits and requirements. Spill prevention measures would be undertaken to maintain the safety of the construction personnel and protect the environment. Access to the ROW would be controlled to allow only authorized vehicles and maintain the safety of the public and construction crews.

Pipeline construction is much like a moving assembly line. Construction of the pipeline involves several procedures that are summarized in the following sections (**Figure 2-5**). These operations include:

- Survey and staking;
- Clearing and grading;
- Trenching;
- Pipe stringing;
- Bending;
- Welding;
- Lowering the pipeline;
- Padding and backfilling;
- Hydrostatic testing; and
- ROW cleanup and restoration.

Construction would proceed along the pipeline in one continuous operation. As construction proceeds along a spread, construction at any single point along the pipeline, from initial surveying and clearing, to backfilling and finish grading, is anticipated to last about 6 to 10 weeks. Multiple spreads may be constructed at the same time. The process would be coordinated in such a manner as to minimize the total time an individual tract of land is disturbed, exposed to erosion, or temporarily precluded from its normal use.

Temporary workspaces would be required for drilling equipment, pipe assembly, supplies and materials, temporary mud pits and tanks, support vehicles, access to drilling sites, and equipment turn around areas. Erosion control measures would be installed as necessary and in accordance with the SWPPP.

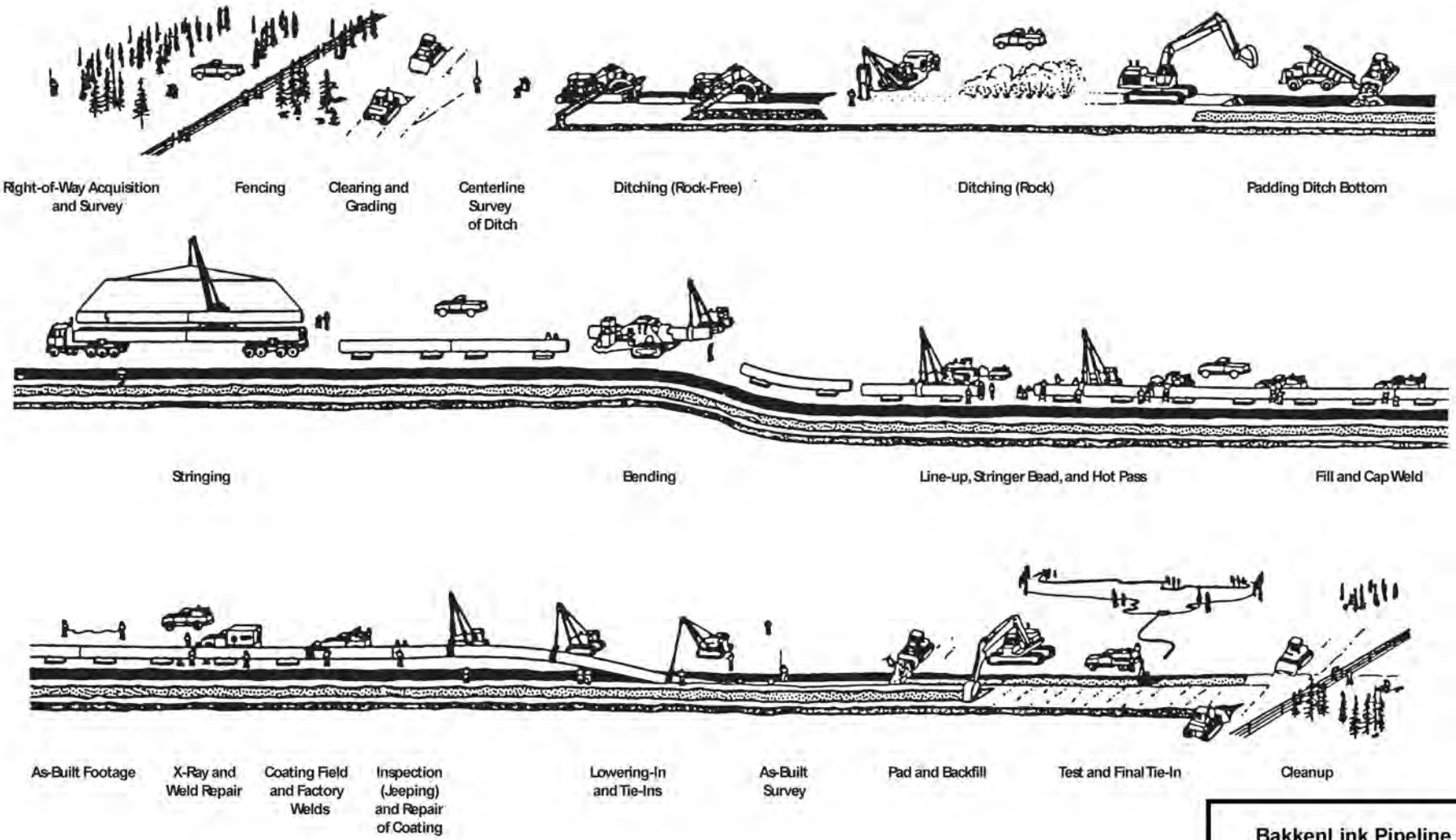
2.2.3.2 Survey and Staking

The first step of construction would involve marking the limits of the approved work area (the construction ROW and temporary workspaces), the pipeline centerline, access roads, existing utility lines, and other special areas. Sensitive areas such as wetland boundaries and cultural resource sites would be marked and flagged. BakkenLink would notify landowners in advance of construction activities that could affect their property, business, or operations.

2.2.3.3 Clearing and Grading

The construction ROW would be cleared and graded (where necessary) to provide a relatively level surface for construction equipment, a sufficiently wide workspace for the passage of heavy construction equipment, and safety for the pipeline workers. Vegetation would be mowed and cleared to the edge of the work area in grassland areas where grading is not required.

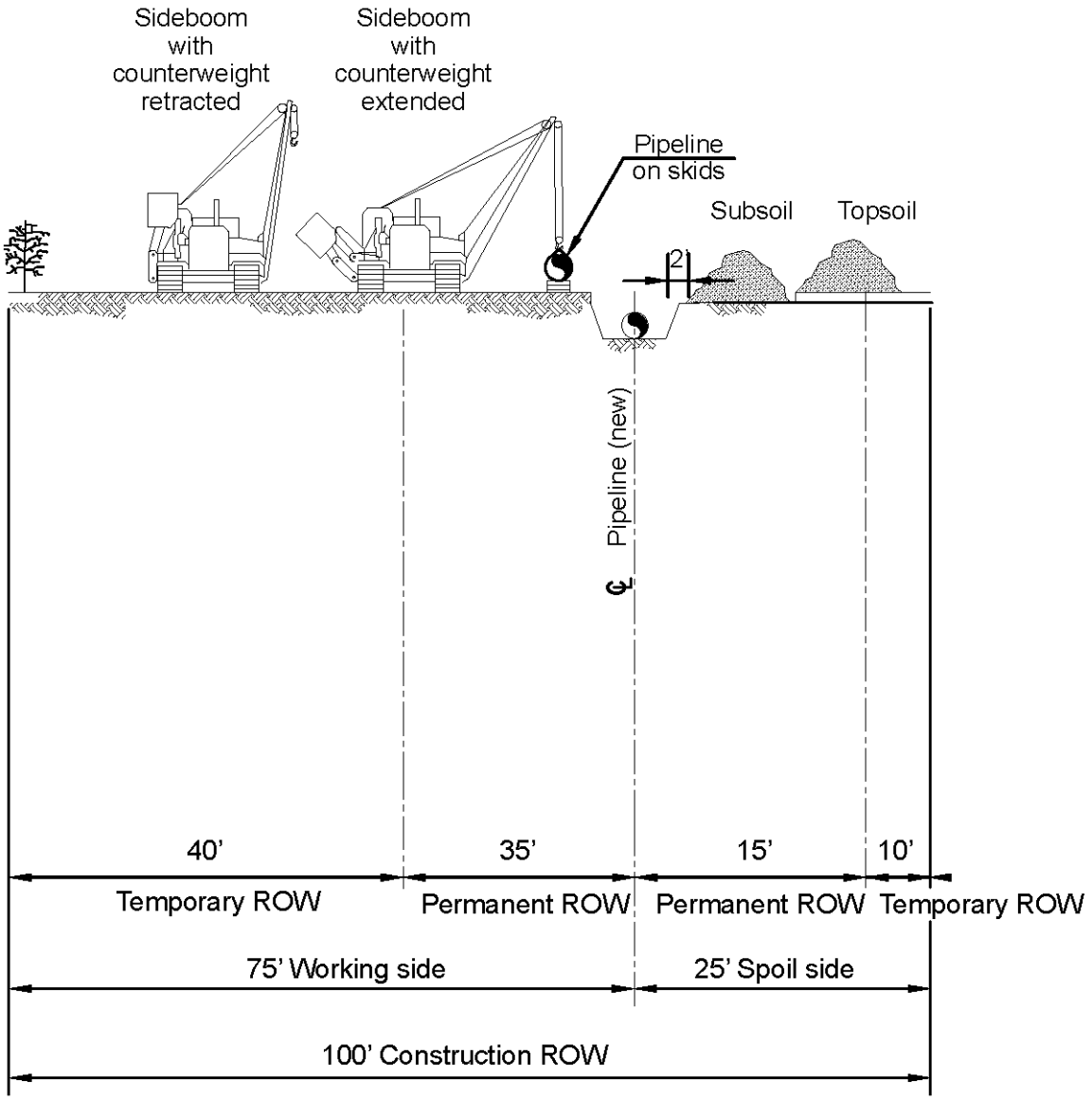
To avoid soil mixing, topsoil would be removed and segregated from the underlying subsoil. Topsoil would be removed from above both the trench and the spoil side of the Project ROW (**Figure 2-6**) for the entire length of the pipeline, except on USFS land. Across USFS land, topsoil would be stripped from above the entire Project ROW (**Figure 2-7**). Decompaction would be provided on the working side of the trench where topsoil was not stripped, but experienced significant compaction due to equipment traffic, by employing a paraplow or ripper with shanks.



Not to Scale

BakkenLink Pipeline Project

Figure 2-5
Typical Pipeline Construction Sequence



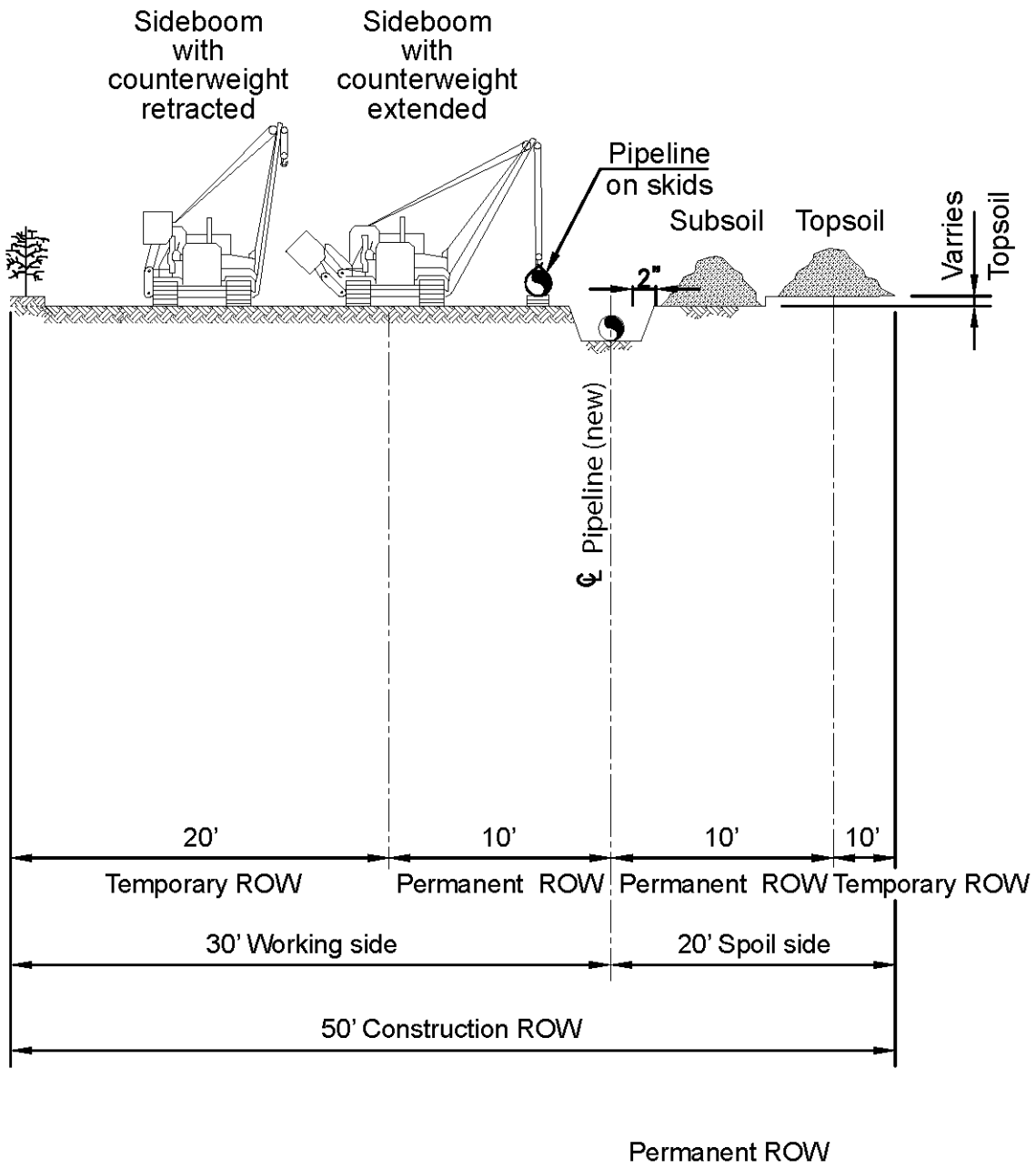
NOTES:

1. Although the dimensions shown are typical, some variations may exist due to site-specific conditions. Unless otherwise indicated on the alignment sheets, the maximum width of the construction ROW shall be as shown in the table for the appropriate pipe diameter.
2. Topsoil and subsoil shall be segregated for the trench and spoil sides.

BakkenLink Pipeline Project

Figure 2-6

Trench and Spoil Side Topsoil Salvage



NOTES:

1. Although the dimensions shown are typical, some variations may exist due to site-specific conditions. Unless otherwise indicated on the alignment sheets, the maximum width of the construction ROW shall be as shown in the table for the appropriate pipe diameter.
2. Topsoil and subsoil shall be segregated for the entire 50-foot ROW (trench, spoil and working sides).

BakkenLink Pipeline Project

Figure 2-7

Typical Full Right-of-Way Topsoil Salvage on USFS Lands

Typically, topsoil would be segregated and stored on the temporary construction ROW on the spoil side of the trench. After pipeline installation is complete, the subsoil would then be replaced in the pipeline trench and adjacent areas to restore the land's natural contours. Only then would the topsoil be replaced in the locations from where it was initially removed. Special, site-warranted cases (e.g., rugged terrain), however, may require the storage of topsoil on the working side of the trench (e.g., construction on an upward facing side slope) (Section 2.2.4.1). Typical construction schematics depicting topsoil and subsoil torage locations in proportion to the Project ROW for these special site-warranted cases, in addition to most other field cases that would be encountered during construction, are provided in the POD.

The depth of topsoil stripping would vary according to the ROW landscape position. Construction activities would be suspended during abnormally wet conditions to prevent excessive rutting or mixing of topsoil with subsurface soils. The suspension of construction activities would be dependent on the depth of topsoil rutting for the portion of the Project ROW where topsoil was not stripped, with work halting when ruts reached an average depth of 3 to 4 inches.

Fences and gates would be constructed during the clearing and grading operations to allow continuous use of pastures, grazing units, and livestock facilities. Silt fence would be installed along the ROW adjacent to wetlands and streams. When crossing small water features, such as small ponds, streams, and creeks, approved temporary flumed structures would be constructed to minimize impacts to the water feature. Specific methodologies for waterbody crossings have not been determined at this time, but would be determined by the Contractor based on construction site-specific circumstances, such as flow rate, water volume, and crossing width. Temporary erosion controls would be installed after initial disturbance of soils, where necessary, to minimize erosion (POD, Appendix III, Typical Construction Drawings). Erosion controls would be maintained throughout construction.

2.2.3.4 Trenching

Trenches would be excavated using a wheel trencher or backhoe. Special excavation equipment or techniques may be used if large quantities of solid rock are encountered. Trenches would be excavated to a depth sufficient to provide the minimum cover required by federal, state and local municipalities as well as landowner requirements. USDOT specifies a minimum cover of 3 feet from natural ground to top of pipe.

The amount of open trench permitted at any time during the project would be governed by the stability of the trench and the prevailing weather conditions. The open trench would be restricted so as not extend more than three miles ahead of the welding and x-ray crew unless approved by BakkenLink. When the trench is excavated through lands where livestock is confined or through cultivated fields where it is desirable for the landowner to have a passageway across the trench, temporary fences, gates and/or bridges would be installed to provide appropriate restriction or safe access across the open trench.

2.2.3.5 Pipe Stringing, Bending, and Welding

Following trenching, the Contractor would string the pipe along the ROW. Pipe would either be stored at storage yards or transported directly to the pipeline ROW. The pipe lengths are typically 40 to 80 feet long. A stringing crew using special trailers would move the pipe along the ROW.

A pipe-bending machine would be used to make slight bends in the pipe to account for changes in the pipeline route and to conform to the topography. The bending machine uses a series of clamps and hydraulic pressure to make a smooth, controlled bend in the pipe. All bending is performed in strict accordance with federally prescribed standards to ensure integrity of the bend. Pipe would be bent at the mill when necessary for sharp bends. The pipe would be pre-coated at the mill with a fusion-bonded epoxy external coating (or other coating technique) to provide corrosion protection.

A welding process would be utilized to join the sections of pipe into one continuous length. Each welder would be required to pass an approved qualification test to work on a particular pipeline aspect. The qualification tests would be conducted using project specific weld procedure(s) that would be developed in accordance with federally adopted welding standards.

Welds would be nondestructively tested to ensure structural integrity and compliance with the applicable USDOT regulations. Those welds not meeting established specifications would be repaired or removed. Once the welds are approved, the welded joints would be externally coated and the entire pipeline would be visually and electronically inspected for coating defects, scratches or other damage. Any damage or defects would be repaired before lowering into the trench.

2.2.3.6 Lowering-in, Padding, and Backfilling

A series of side-boom tractors would simultaneously lift welded sections of the pipe and carefully lower the sections into the trench. Non-metallic slings protect the pipe and coating as it is raised and moved into position. In rocky areas, the Contractor may place sandbags or foam blocks at the bottom of the trench prior to lowering-in to protect the pipe and coating from damage. Trench breakers or water stops will be installed, as necessary, adjacent to wetlands and stream crossings to eliminate groundwater migration along the trench.

The trench would be dewatered, as necessary, prior to lowering in. Dewatering effluent would pass through sediment filters (hay bale structures and/or filter bags), to ensure compliance with applicable water quality requirements.

The trench would be backfilled after the pipe has been installed. Soil would be returned to the trench in the reverse order of excavation. Subsoil would be backfilled first followed by the topsoil. The trench line (subsoil) would be compacted with a wheeled-roller or other suitable construction equipment. A crown would be left over the trench line to allow for natural subsidence. If the excavated material (rock) can damage the pipe and/or coating, the pipeline would be protected with a rock shield and/or covered with select fill, obtained from commercial borrow areas or by separating suitable material from nearby trench spoil. Topsoil would not be used for padding.

2.2.3.7 Hydrostatic Testing

The entire length of the pipeline would be hydrostatically tested per USDOT regulations in 49 CFR §195 before being placed into service. Depending on the varying elevation of the terrain and the location of available water sources, the pipeline likely would be divided into sections to facilitate the test. The pipeline test section breakdowns are provided in **Tables 2-6** and **2-7**. BakkenLink anticipates using water use from municipal and/or private water sources.

Each pipe section would be filled with water and pressurized to a level higher than the operating pressure. The test pressure would be held for a specific period to confirm that it meets the design strength requirements and whether any leaks are present. BakkenLink would require a minimum hydrostatic test pressure of 1,850 psig. The maximum pressure would be limited to 95 percent of the Specified Minimum Yield Strength of the steel pipe, which is 2,421 psig.

Hydrostatic test water would be discharged in upland areas within or along the edges of the construction ROW using energy dissipation devices, such as filter bags or straw bale dewatering structures, to minimize erosion and sedimentation, and in accordance with the approved ROW permit and NPDES

Table 2-6 Hydrostatic Test Segments and Estimated Water Volumes

Segment Number	Segment Break Locations	Approximate MP		Segment length (feet)	Water Volume (gal)	Source[1]	Proposed Discharge Locations (Approximate MP)
1 – Trunk line	Beaver Lodge – Lake Sakakawea	0	10	52,880	323,784	Municipal	0
2 – Trunk line	Lake Sakakawea	10	12	12,300	74,280	Municipal	12
3 – Trunk line	Lake Sakakawea – Arrow Midstream Interconnect	12	34	116,433	712,919	Municipal	12, 34
4 – Arrow Midstream Lateral	Arrow Midstream Lateral	0	1.3	6,837	41,862	Municipal	0
5 – Trunk line	Arrow Midstream Interconnect – Dunn Interconnect	34	91	292,825	1,792,967	Municipal	34, 91
6 – Dunn Lateral	Dunn Lateral	0	0.1	739	4,526	Municipal	0
7 – Trunk line	Dunn Interconnect – Fryburg	91	127	190,820	1,168,386	Municipal	91, 127
8 – Belfield Lateral	Belfield Lateral	0	3.7	19,536	53,430	Municipal	0, 120
	Total			**692,370**	**4,172,154**		

[1] Local municipal/private sources to be determined.

Table 2-7 HDD Segments and Estimated Hydrotest Water Volumes

Location	HDD Section	Approximate MP		Segment length (feet)	Water Volume (gal)	Source[1]	Proposed Discharge Locations (Approximate MP)
Trunk line	Lake Sakakawea – North Bluff	9.7	10.5	4,000	24,156	Municipal	8.9
Trunk line	Little Missouri River – North Bluff	68.4	69.6	5,885	35,540	Municipal	67.3
Trunk line	Little Missouri River	69.6	69.8	1,315	7,941	Municipal	69.4
Trunk line	Little Missouri River – South Bluff	71.1	72.1	5,139	31,034	Municipal	73
Trunk line	USFS – Woody Draw	73.1	73.4	1,488	8,986	Municipal	72.8
Trunk line	USFS – U.S. Highway 85	73.9	74.0	1,003	6,057	Municipal	74.2
Trunk line	USFS – Summit Campground	74.8	75.9	5,849	35,322	Municipal	77
Trunk line	Green River	109.2	109.5	1,530	9,240	Municipal	108.9
Trunk line	I-94	124.2	124.4	1,004	6,063	Municipal	124
	Totals			**27,213**	**164,339**		

[1] Local municipal/private sources to be determined.

discharge permits. No water discharge would occur within 500 feet of waterbodies and other environmentally sensitive areas would be avoided. Test water would contact only new pipe and BakkenLink does not plan to add chemicals to the test water. Once a test section successfully passes the hydrostatic test, the water is emptied from the pipeline in accordance with federal and state requirements. The pipeline would then be dried to assure it has no free water in it before oil is put into the pipeline.

The following tables describe BakkenLink's estimated water volumes required for hydrostatic testing activities. The tables are broken down into volumes necessary for the trunk line and lateral hydrotest segments and additional HDD testing volumes.

BakkenLink has provided estimates of the total water use for the hydrotesting and drilling operations (**Table 2-8**). The estimate reflects water volumes needed for the trunk line hydrotest, HDD pre-installation hydrotests, and drilling operations independently. It is possible the water amounts can be reduced if the water is reused between test segments. For example, water used during HDD pre-installation hydrotest could be stored, filtered and reused for mixing in the drilling mud. However, the total water usage in **Table 2-8** does not account for any reuse of water.

Table 2-8 Total Water Usage

Water Usage	Water (gallon)
Trunk line Hydrotest Total	4,172,154
HDD Pre-installation Hydrotest Total	164,339
Water for Drilling Operations Total	142,548
Water Totals	4,479,041

2.2.3.8 Cleanup

The final step in the construction process is restoring the ROW as closely as possible to its original condition. Depending on the Project requirements, this typically involves decompacting construction work areas, replacing the topsoil, and seeding non-cultivated land. BakkenLink has indicated that decompaction would be performed on the working side of the trench where topsoil was not stripped, but experienced significant compaction due to equipment traffic, by employing a paraplow or ripper with shanks. Final grading is anticipated to occur within 20 days of backfilling the trench. Permanent erosion control measures including, but not limited to, trench plugs, permanent slope breakers, erosion control matting, and riprap (drawings for which are included in BakkenLink's POD, Appendix III, which was submitted to the federal agencies with the ROW Grant application) would be installed as necessary. Additional details pertaining to permanent erosion and sediment control were provided in BakkenLink's *Construction Mitigation and Reclamation Plan* (CMRP), which also was submitted as part of their POD (Appendix XV).

Pipeline markers and/or warning signs would be placed along the pipeline centerline at line-of-sight intervals and at crossings of roads, railroads, and other key points (as required by 49 CFR, Part 195) to show the location of the pipeline, unless otherwise prohibited by land managing agencies. Access roads would be restored to pre-construction conditions, unless otherwise specified by the property owner and approved by regulatory agencies. Private and public property (e.g., fences, gates, driveways, roads, etc.) that were disturbed by construction would be restored to their original or better conditions, consistent with agreements with individual landowners, counties and/or townships, and any applicable permit requirements. Rocks greater than 6 inches across would not be placed within one foot of the surface on

tilled land. Rocks would be collected and disposed of off the ROW or at a location designated by the landowner.

2.2.3.9 Restoration

The construction contractor would limit ground disturbance wherever possible and use appropriate erosion and sediment control measures. Prior to the completion of construction activities, BakkenLink would ensure that the BLM authorized officer has access to review and inspect vegetation and restoration activities along the ROW on federal lands. BakkenLink and its contractors would be responsible for the removal of temporary construction facilities, structures or surface materials, reclamation of the original grade contours, and restoration of disturbed areas to a state similar to pre-construction conditions, to the extent practicable, unless landowner consent is obtained to do otherwise. Post-construction reclamation activities include removing and disposing of debris, dismantling temporary facilities, leveling or filling tire ruts, soil decompaction, and reseeding non-cultivated areas. Specific information regarding reclamation activities are described in the CMRP (Appendix XV).

2.2.4 Special Construction Techniques

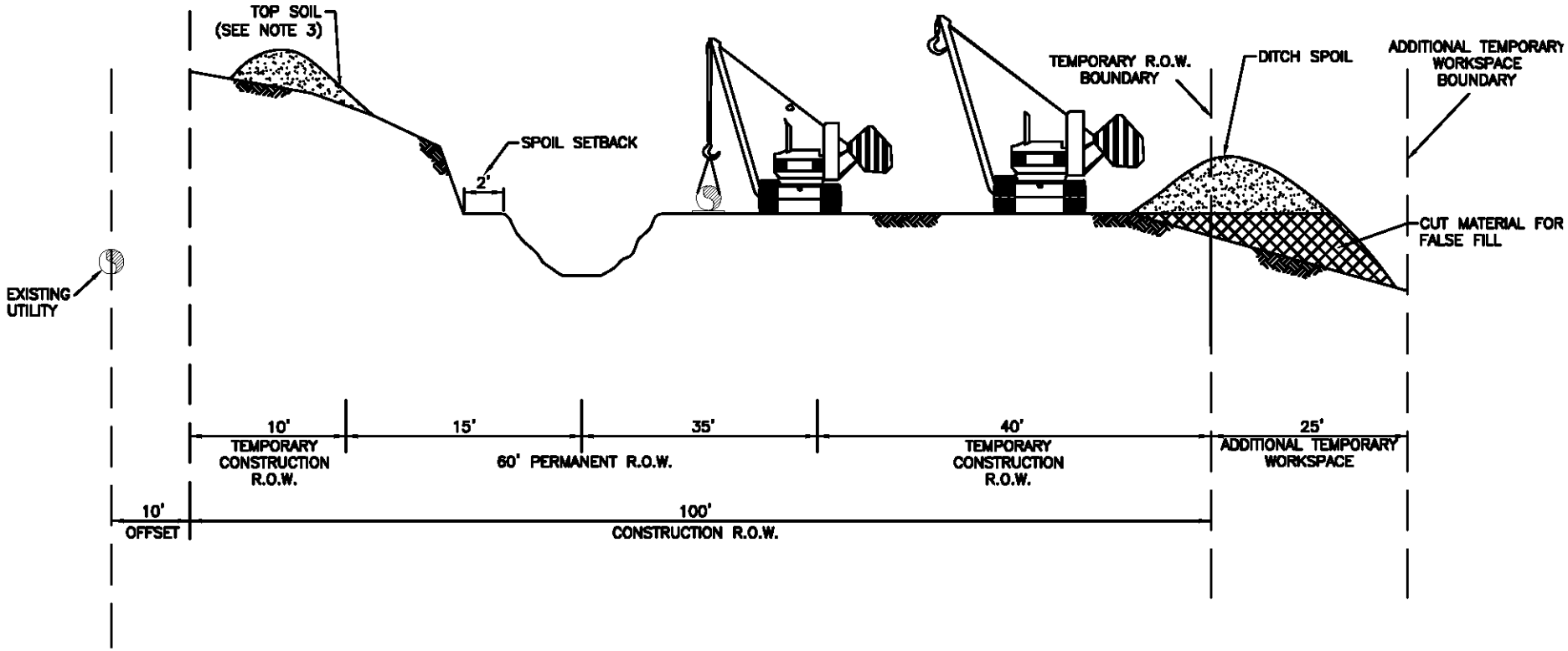
2.2.4.1 Rugged Terrain

Certain locations along the proposed route may require special construction methods used for steep slopes. Some of the steep slope segments may be located across the Little Missouri National Grassland (LMNG) and BakkenLink would need to obtain USFS approval to exceed a 50-foot-wide construction ROW at these locations. In these areas, BakkenLink may employ side slope construction techniques. **Figures 2-8** and **2-9** depict the side slope construction technique both within a 100-foot-wide construction ROW and a 50-foot-wide construction ROW, respectively. In both cases, topsoil would be segregated from the full ROW, and the spoil from the cut area and trench would remain on the approved construction ROW. In some cases, it may be necessary to place some of the spoil from the cut areas onto the working side of the trench, and allow the construction equipment to work off of the spoil. In particularly steep areas, safety precautions would be implemented to ensure public and worker safety. It may be necessary to anchor equipment and pipe with cables to secured equipment or “dead men” to prevent the equipment or pipe from sliding down steep slopes. Some equipment also may need mechanical assistance to traverse steep slopes. Such equipment would be winched up or down the slopes. Enhanced erosion control and revegetation measures may be required in areas of rugged terrain.

2.2.4.2 Residential Areas

BakkenLink would generally avoid construction near residential areas to ensure that impacts to residences are minimized. Where applicable, the following measures would be implemented to minimize impacts on residences:

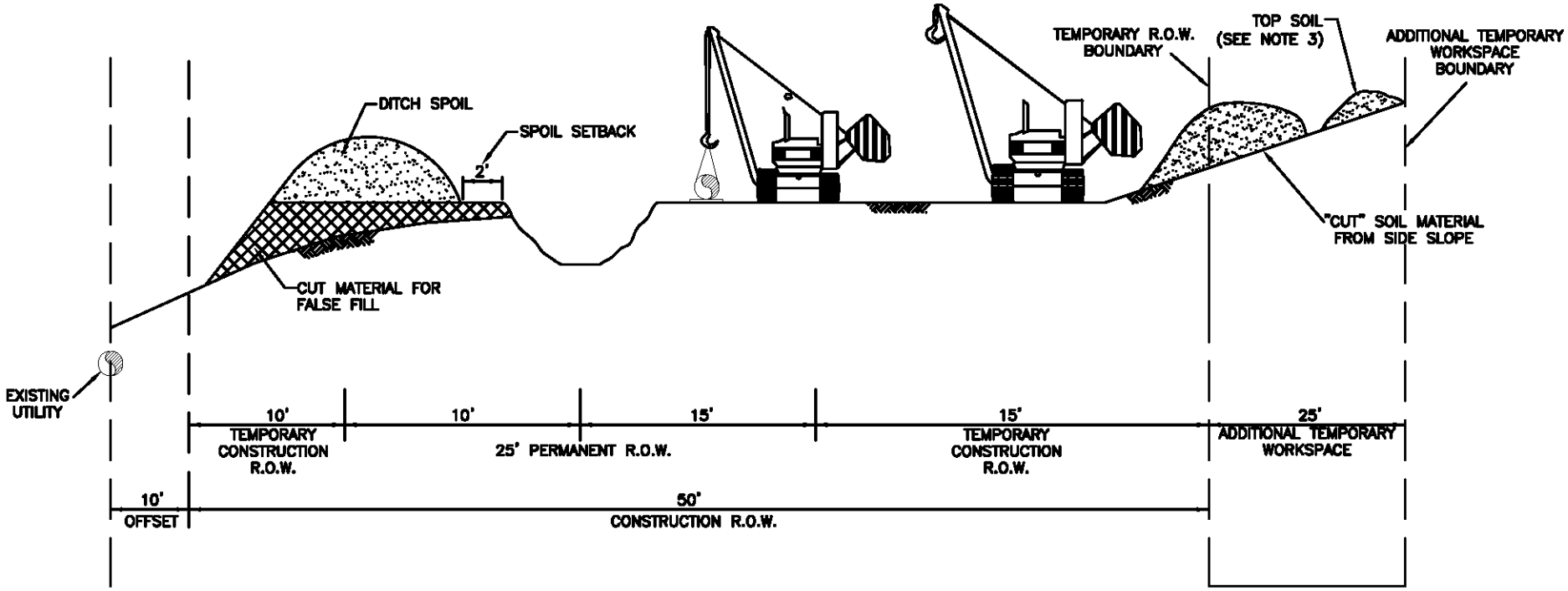
- Temporary safety fences would be erected to limit access to the construction area. The fence(s) would extend at least 100 feet on either side of the residence along open trenches.
- Residents would be notified in advance of any scheduled disruption of household utilities. The duration of the interruption would be kept as brief as possible. Representatives of the local utility companies would be invited to be on-site during construction when necessary.
- Special consideration would be made to accommodate requests regarding private landscaping and other potential conflicts.
- The construction contractor would minimize the time the trench is left open.
- Dust would be controlled during construction.



Profile

BakkenLink Pipeline Project

Figure 2-8
Typical Construction
Upward Side
Slope Workspace



Profile

BakkenLink Pipeline Project

Figure 2-9
Typical Construction Downward Side Slope Workspace Within USFS Lands

2.2.4.3 Agricultural Areas

Specific construction measures would be implemented during different phases of construction including:

- Grading
  - Topsoil would be stripped and segregated from subsoil piles.
  - Natural flow patterns would be maintained.
- Drain Tiles and Irrigation Systems
  - Landowners would be contacted prior to construction to locate existing drainage tiles and irrigation facilities. Future plans for drainage tiles and irrigation facility locations also would be requested.
  - Colored flags/stakes marking drain tiles and irrigation pipes would be placed and maintained during construction.
  - Drainage flows and irrigation water supplies would be maintained, unless service interruption is coordinated with the landowner.
  - Drain tiles would be probed to determine if damage has occurred beyond the ditch line. Tiles damaged during construction would be documented by station number and orientation. Tiles damaged during construction would be repaired to their original condition or better.
  - Records of repairs would be maintained by BakkenLink and would be available for landowner reference.
- Restoration and Revegetation
  - Rutting and compaction would be repaired prior to revegetation.

In general, the ROW would revert to previous land use after construction is completed and during operation of the pipeline. Landowners would be compensated for loss of use due to construction.

2.2.4.4 Highway and Road Crossings

Highway and road crossings would be constructed according to applicable crossing permits. Primary roads are generally major roads and highways with relatively large volumes of traffic that have a well-defined traveled roadway (traffic lane) and shoulders with a granular pavement and/or concrete surface. Typically, primary roads would be constructed using the conventional bore method or by the HDD method. Little or no traffic disruption is expected when using the bore or HDD method. BakkenLink currently proposes to open cut all unimproved roads and to bore or HDD all highways and paved or improved roads (POD, Appendix XIII, Access Roads and Improvement Table, and Appendix XXII, Road Crossings and Methodology).

Unimproved roads are generally minor roads with minimal traffic. They would normally be identified as small roadways, trails, or two-tracks with no embankment or adjacent ditches and constructed/situated in natural earth material. The surface may have a light sprinkling of granular material. Unimproved roads would be crossed using the open cut method.

Open cutting a road may require temporary closure of the road. Detours may be necessary if one lane of traffic cannot be kept open. Temporary closures and/or detours would be conducted according to applicable permits and in coordination with local road authorities and landowners. Safety and minimizing traffic disruptions are important in open cut project implementation.

Depending on permit conditions, the pipe may not be cased at road crossings.

2.2.4.5 Waterbody Crossings

"Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes. Waterbody crossings would be constructed in accordance with applicable permits. Waterbody crossings would be constructed using various methodologies including: Pipeline-pull and Designed Pipeline Self-Lowering, Open cut trenching and/or HDD technology. The methodology for each waterbody location would be determined by the crossing size and sensitivity.

BakkenLink's SWPPP would specify measures based on BMPs that would address erosion control, equipment refueling, temporary bridge crossings, timing, construction methods, and restoration. Temporary workspaces are typically required on each side of a waterbody crossing to stage construction, fabricate the pipeline, and store materials. Temporary workspaces would be located in upland areas a minimum of 50 feet from the waterbody edge. Trench spoil would be stored at least ten feet from the waterbody banks (topography permitting). Sediment barriers, such as silt fence, would be installed to prevent spoil and sediment-laden water from entering the waterbody.

Open Cut Construction

The open cut crossing method of construction involves excavating a pipeline trench across the waterbody, installing a section of pipe, and then backfilling the trench with material excavated from the trench. Excavation and backfilling of the trench would be performed using backhoes or other excavation equipment. BakkenLink proposes to cross most of the waterbodies with little to no flow using the open cut method (POD, Appendix IX).

Horizontal Directional Drill Construction

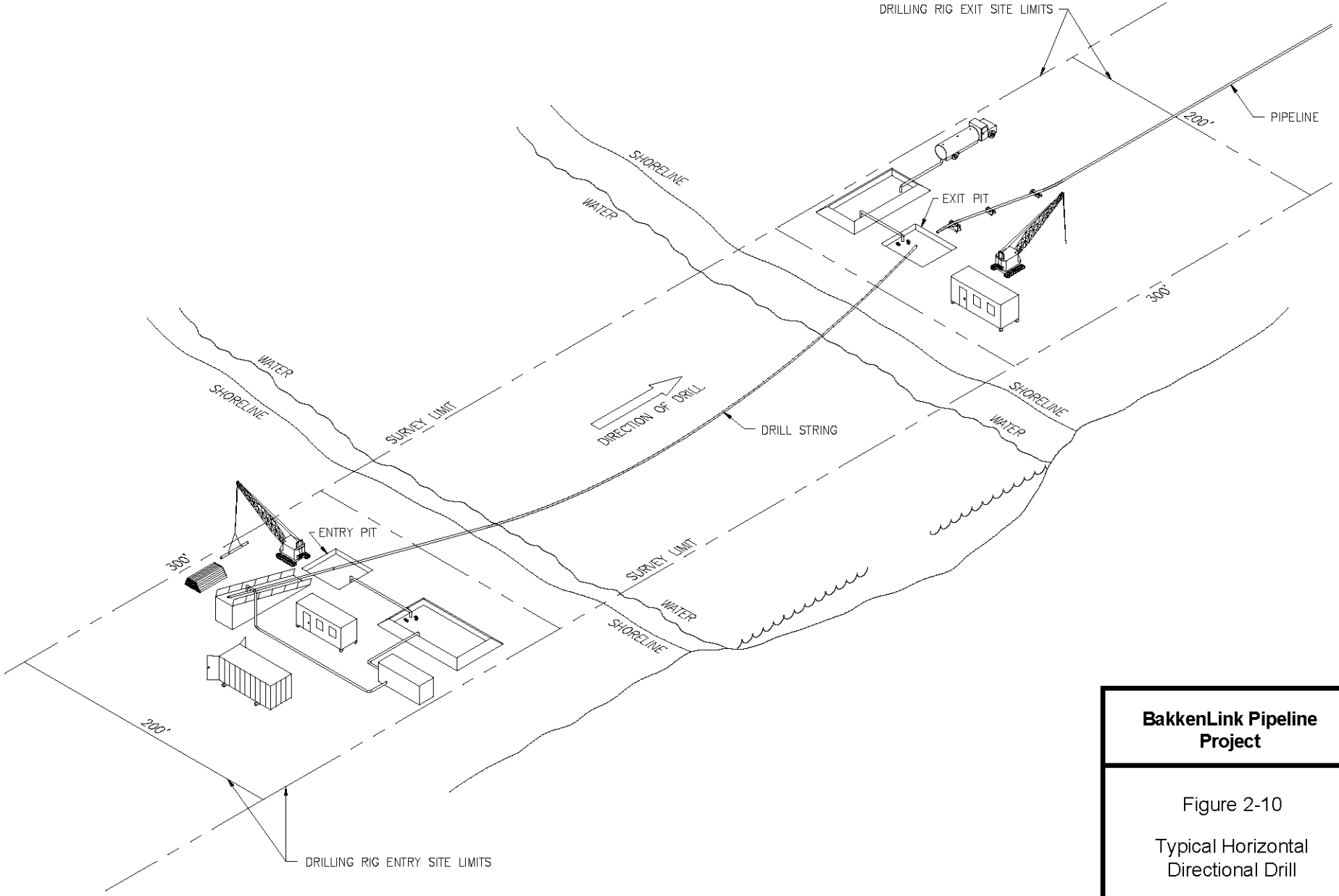
In general, HDD is a trenchless technique for installing pipelines or other linear utilities to avoid or minimize surface or sensitive area disruptions and install pipe where conventional installation techniques are unfavorable. The first phase consists of drilling a directionally controlled pilot hole along a predetermined path extending from grade at one end to grade at the opposite end. The entry and exit holes for the HDD are typically designed to be set-back from the area of avoidance to allow for the geometry of the drill to reach a desired target depth. For example, entry and exit holes for a river crossing may be set-back a minimum of 200 to 300 feet from the river banks to allow for the geometry of the drill to reach the designed depth. **Figure 2-10** provides an illustration of a typical HDD for crossing perennial streams.

The second phase consists of enlarging the pilot hole to a size that would accommodate pulling the pipeline through the enlarged hole. Generally, the hole should be 1.5 to 2 times the outer diameter of the pipe. Preliminary analysis indicates a 24-inch-diameter hole would be recommended for the 12-inch-diameter pipeline. The enlargement of the pilot hole, or reaming, would be accomplished by pulling reaming heads of specific diameters through the hole, in stages if necessary, to create a wider hole. All stages of HDD involve circulating drilling fluid from equipment on the surface through the drill pipe to a downhole bit or reamer, and back to the surface through the annular space between the pipe and the wall of the hole. The circulating fluid primarily consists of bentonite, which is a non-toxic, naturally occurring sedimentary clay composed of weathered and aged volcanic ash. The drilling fluid serves several purposes: to control the frictional heating of the drilling components, remove large cuttings, and keep the drilling equipment lubricated. In a separate operation, while the hole is being drilled, the pipe is being welded to accommodate the length of the HDD and tested in one piece along the construction easement. Once the drilled hole is prepared and stable, the welded pipeline, or drill string, is pulled through the hole. Generally the pipe string is laid out and welded on the exit side of the drill. The drill string can be assembled in segments instead of a continuous length; however pipe pulling operations would cease while the segments are being welded together. To minimize the risk of the drilled hole failing, a continuous drill string fabrication would be used.

Directional Drilling Shore to Shore

Not to Scale

Condensed for Illustrative Purposes



BakkenLink Pipeline Project

Figure 2-10

Typical Horizontal Directional Drill

During the HDD method, drilling fluid would be under great pressures and when expended down-hole, it would flow in the path of least resistance. In the drilled annulus, this path may be an existing fracture or fissure in the substrata, a high porosity streak, and/or a pocket of incompetent substrate material being penetrated. These paths could lead to the surface and unplanned releases of drilling fluid ("frac out") could occur. BakkenLink has prepared a contingency plan for the inadvertent returns of drilling fluid to the surface (POD, Appendix XXIII, Inadvertent Returns Contingency Plan).

The major advantage of the HDD technique is the minimal effects on sensitive surface areas and temporary surface impacts during construction activities. Additional workspaces would be required at the drill entry and exit locations, generally 300 feet by 300 feet, as well as an area to string, weld and leak test the pipe prior to pull back. This drill stringing area is essential for proper alignment of the pipeline as it is pulled through the hole. BakkenLink proposes to use the HDD method to cross the Little Missouri River and the Green River (POD, Appendix XI, Little Missouri River Crossing, and Appendix XII, Green River Crossing) and seven other crossings.

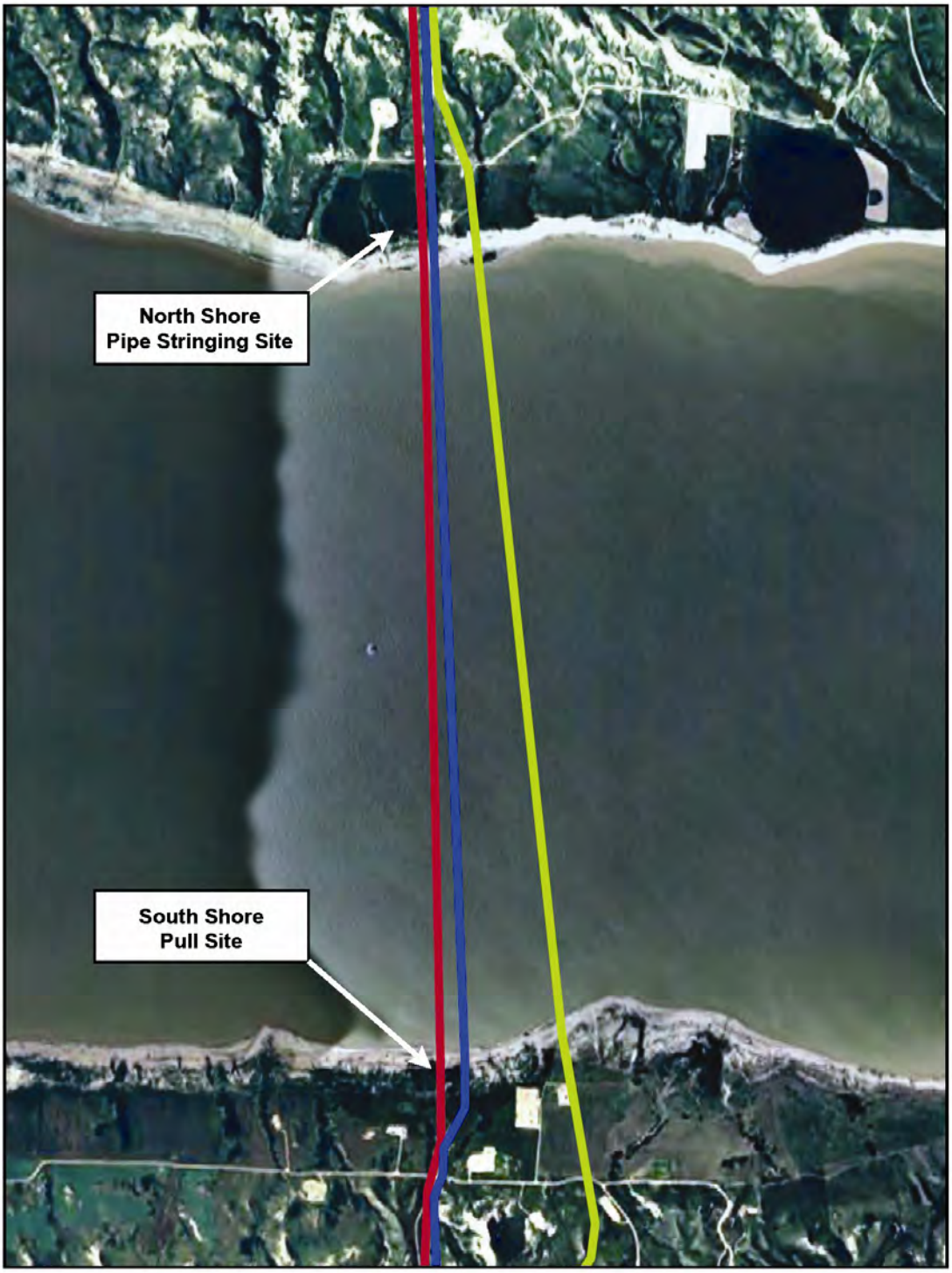
Lake Sakakawea Crossing

The Pipeline-Pull Method (POD, Appendix X, Lake Sakakawea Crossing) would be used to install and lower a 12-inch-diameter pipeline at the Lake Sakakawea crossing adjacent to existing pipelines (**Figure 2-11**). The pipeline installation would include a conventional pull with segments of pipe welded together in sections on the north shore of the lake and then joined to form an approximate 13,000-foot-long pipeline that is pulled toward the south shore by a linear winch located on the south shore.

This method would require additional temporary workspaces on both shorelines (**Figures 2-12** through **2-14**). On the south shoreline, a high-powered winch would be stationed and aligned to pull the assembled pipeline originating from the north shoreline. On the other side, a construction "assembly line" is constructed that would allow for the systematic assembly of the pipeline. The pipeline would be welded and tested along this assembly line until it is ready to begin crossing the lake. As new pipe is added to the end of the pipe string, the winch slowly pulls the pipe across the lake one pipe length at a time. As the completed pipe is pulled across, floatation devices would be used to keep the pipe a certain distance above the lake bottom as to not impede surface traffic. After the pipeline has fully crossed the lake, the floatation devices would be removed and the pipeline would be lowered to the lake bottom.

Once lowered to the lake bottom, it would be lowered below the lake bottom for additional protection and positioning as required by federal regulations. The lowering and protection of the pipeline at the North and South shorelines would be achieved by excavating a trench using long-reach excavators on both banks. The excavators would commence at the shoreline and construct a berm adjacent to the pipeline centerline from trench materials and use the berm to move the excavator out from the shore as determined by site conditions and water depths. After the pipeline is installed, the excavators would reverse the process and transfer the berm material back into the trench and over the pipeline.

BakkenLink has proposed using a common jetting technique that has been adapted for the site-specific conditions of the lake. A customized lowering sled would use fluid jets and suction pumps (Toyo pumps) to fluidize the lake bottom under the pipeline, causing the pipeline to sink into the fluidized substrate as the sled is pulled along the lake bottom. The design of the lowering sled would be specific for the Project; however, the concept of the dual Toyo pumps and has been utilized before by several construction groups for pipeline lowering in difficult and environmentally sensitive locations. The ability to trail a turbidity mat over the discharge and diffuser is designed to direct the slurry back into the trench to reduce lateral dispersion and provide positive backfill over the lowered pipeline while reducing water column turbidity.



Legend

Proposed Centerline

Existing Pipelines

N

BakkenLink Pipeline Project

Figure 2-11

Project Route -
Lake Sakakawea Crossing

06/29/2012

Legend

Proposed Centerline

County Boundary

Additional Temporary Workspace

N

0 1,000 2,000

Feet

BakkenLink Pipeline Project

Figure 2-12

Project Route - Lake Sakakawea Crossing

Note: Shore to shore crossing length - 12,166 feet.

06/29/2012

Legend

- Proposed Centerline
- Permanent Easement
- Temporary Easement
- Additional Temporary Workspace

N

0 125 250
Feet

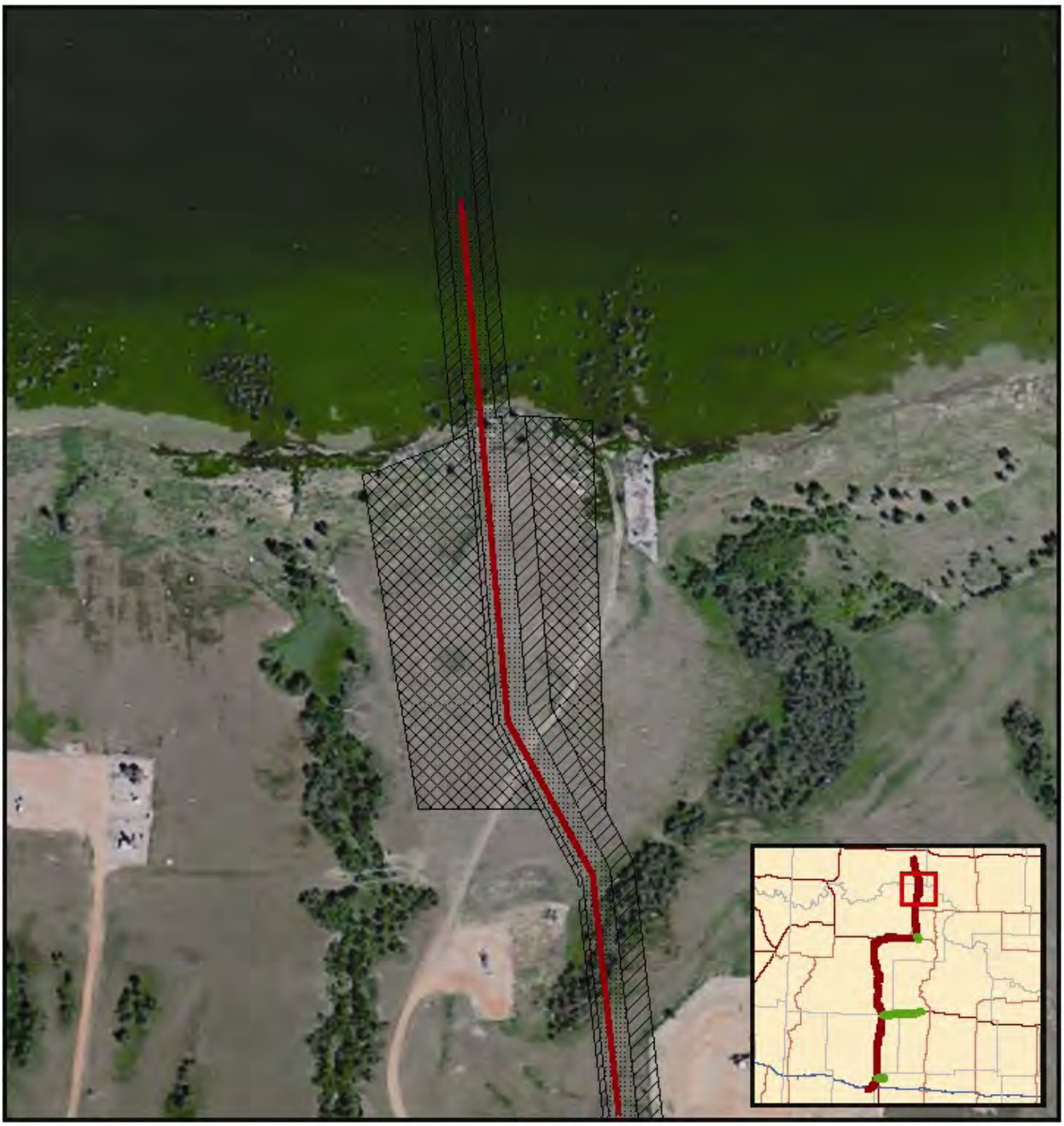
BakkenLink Pipeline Project

Figure 2-13

Project Route - Lake Sakakawea Crossing (North Shore)

Note: Addidional Temporary Workspace - 330 Feet x 1,150 feet.

06/29/2012



Legend

- Proposed Centerline
- Permanent Easement
- Temporary Easement
- Additional Temporary Workspace

N

0 125 250
Feet

BakkenLink Pipeline Project

Figure 2-14

Project Route -
Lake Sakakawea Crossing
(South Shore)

Note: Additional Temporary Workspace - 400 feet x 680 feet.

06/29/2012

The support equipment for the lowering operation would include a Flexifloat catamaran that would house the power generator for the Toyo pumps. An initial conceptual set of drawings of the lowering system is included in the POD (Appendix X, Lake Sakakawea Crossing), and would be supplemented by actual design drawings as the program is developed to fabrication. The operation would include a team of divers, vessels, diving equipment, marine and land surveys and instrumentation, an onshore crane, the linear winch and crew, a hold back winch and crew.

The dive team would operate and monitor the lowering operation including pipeline lowering depths and discharge. Both the Flexifloat catamaran and the lowering sled would be pulled across the lake by the winch previously used for the pipeline pull. The pull cable would incorporate floatation and would connect to both the water surface pontoon and the sled.

The lowering operation would be performed immediately after the installed pipeline is flooded and after the installed pipeline elevation is surveyed. The construction staff would deploy turbidity monitoring instrumentation at agreed locations with the authority to stop construction in case of the construction activity exceeding an agreed turbidity level above that observed prior to work commencement (i.e., background measurement). Additional lowering passes would be performed until the pipeline reaches the designed depth.

For the Lake Sakakawea crossing, the proposed methodology is based on the self-lowering of the pipeline section. BakkenLink has obtained geotechnical cores at selected locations along the crossing centerline. A study of the soils analysis would determine the specific gravity that would be required for the pipeline to self-lower based on its own weight. The BakkenLink design engineers would determine the steel pipe WT and the concrete weight coating that would be applied to the sections of pipe before mobilization to site. Supplemental lowering contingency plans and supplemental mechanical protection contingency plans would be developed should the self-bury option not be feasible per results of soil analyses.

2.2.4.6 Wetland Crossings

BakkenLink would avoid wetlands to the extent practical by routing or by crossing using HDD technology. Wetlands that cannot be avoided by either procedure would be crossed using open cut trenching similar to conventional upland construction procedures, with modifications and limitations to reduce the potential for pipeline construction to affect wetland hydrology and soil structure.

Techniques for wetland crossing would vary according to the type of wetland to be crossed, the length of the crossing, and the level of soil saturation or standing water at the time of crossing. A**n open cut trench** technique may be used for trenching and installation where soils are saturated. This technique consists of stringing and welding the pipe outside of the wetland and excavating the trench through the wetland using equipment supported by mats. Water that seeps into the trench is used to float the pipeline into place using attached flotation devices and by pushing or pulling the pipe with equipment. The floats are then removed from the pipe and the pipe sinks into place. The trench is then backfilled and cleanup completed. Most pipes installed in saturated wetlands would be coated with concrete or equipped with weights to provide negative buoyancy.

If trench dewatering is necessary within wetlands, water would be discharged in accordance with BakkenLink's SWPPP (POD, Appendix XIX) and in a manner that does not cause erosion and does not discharge silt-laden water into waterbodies. Water would be discharged into an energy dissipation device/sediment filtration device such as a straw bale structure or geotextile filter bag. Dewatering structures would be sized to handle the volume of water in the trench.

Construction mitigation measures would limit equipment working in wetlands to that necessary for clearing, excavation, fabricating and installing the pipeline, backfilling the trench, and restoring the ROW. If equipment must operate within a wetland that cannot support the equipment weight without rutting, the

contractor would use wide-track or balloon-tire construction equipment or conventional equipment operated from timber mats or prefabricated equipment mats. All timber mats, prefabricated equipment mats, and subsoil not used as trench backfill would be removed upon completion of construction.

Clearing of vegetation would be limited to trees and shrubs cut flush with the ground surface and removed from the wetlands. Stump removal, grading, topsoil stripping, and excavation would be limited to the area immediately over the trench line. Topsoil segregation would occur if soils are not saturated at the time of construction.

Sediment barriers and erosion control measure would be installed and maintained adjacent to wetlands as necessary to minimize the potential for sediment runoff. Sediment barriers also would be installed where necessary to minimize the potential for sediment to run off the construction ROW and into wetland areas outside of work areas. Sediment barriers would be installed across the full width of the construction ROW at the base of slopes adjacent to wetlands. Sediment barriers installed across the working side of the ROW would be removed when construction equipment is present to allow orderly progression along the ROW. Sediment barriers would be replaced at the end of the day.

Restoration of contours would be accomplished during backfilling. In locations where the topsoil has been segregated from subsoil, subsoil would be backfilled first, followed by the topsoil. Topsoil would be backfilled to the original ground level, leaving a crown over the trench. If rocky soils are present, the pipe would be padded with rock-free soil or sand before backfilling with native bedrock and soil. Trench breakers, consisting of polyurethane foam or sand bags, would be installed where necessary to prevent subsurface drainage of water from wetlands.

Temporary erosion control devices would be installed where necessary until vegetation of adjacent upland areas is successful. Permanent slope breakers may be installed across the ROW in upland areas adjacent to the wetland boundary.

Temporary workspace may be required on both sides of the wetland to stage construction, fabricate the pipeline, and store materials. Temporary workspaces would be located in upland areas at least 50 feet from the wetland edge.

2.2.5 Operation

The SCADA System located at the measurement facilities would provide continuous operating data. Pressure, temperature, flow rate, pressure alarms, and status alarms would be transmitted via satellite to a central location and monitored 24 hours a day and 7 days a week.

The mainline valve locations were sited with guidance from the USDOT Pipeline Hazardous Materials Safety Administration (PHMSA). PHMSA reviewed the locations relative to high consequence areas and unusually sensitive areas and concurred with the mainline valve placement. The pipeline would be continually monitored from an Operations Control Center (OCC) using SCADA and leak detection systems. The leak detection methods and systems are overlapping in nature and progress through a series of leak detection thresholds. The leak detection methods are as follows:

- **Remote monitoring performed by the OCC Operator, which would consist of monitoring pressure and flow data received from valve sites fed back to the OCC by the BakkenLink SCADA system. Remote monitoring is typically able to detect leaks down to approximately 25 to 30 percent of the pipeline flow rate.**
- **Software-based volume balance systems that would monitor receipt and delivery volumes. These systems are typically able to detect leaks down to approximately 5 percent of the pipeline flow rate.**

- **Computational Pipeline Monitoring (CPM) or model-based leak detection systems that would break the pipeline into smaller segments and monitor each of these segments on a mass balance basis. These systems are typically capable of detecting leaks down to a level of approximately 1.5 to 2 percent of pipeline flow rate.**
- **Computer-based, non-real time accumulated gain/(loss) volume trending that would assist in identifying low rate or seepage releases below the 1.5 to 2 percent by volume detection thresholds.**
- **Direct observation methods, which include aerial patrols, ground patrols, and public and landowner awareness programs that would be designed to encourage and facilitate the reporting of suspected leaks and events that may suggest a threat to the integrity of the pipeline. Per 49 CFR 195.412 the pipeline ROW would be inspected 26 times per year not to exceed 3 week intervals. Additional physical inspections can be performed in the areas over the shallow aquifers to aid in early detection.**

The leak detection system would be configured in a manner capable of alarming the OCC operators through the SCADA system and also would provide the OCC operators with a comprehensive assortment of display screens for incident analysis and investigation.

The pipeline operator also would develop a Pipeline Integrity Management Plan, which together with the Emergency Response Plan (ERP), outlines the preventative maintenance, inspection, line patrol, leak detection systems, SCADA and other pipeline integrity management procedures to be implemented during the operation of the Project.

2.2.6 Maintenance

BakkenLink would periodically use the permanent ROW to perform inspections, maintain equipment, and make repairs during the life of the pipeline. Undesired vegetation that may interfere with the safe and reliable operations of the pipeline would be removed.

2.2.7 Abandonment

BLM regulations at 43 CFR, Part 2880, Rights-of-way under the Mineral Leasing Act, would be followed for the abandonment process. These regulations and stipulations developed by the land management agencies would be incorporated into the approved ROW grant. At the Project termination, all surface facilities would be removed, and the disturbed acreage would be reclaimed. The areas would be reshaped to blend into adjoining areas to the extent permitted by existing conditions. All disturbed areas would be seeded with the appropriate seed mixture to ensure that an acceptable stand of vegetation is established.

2.3 No Action Alternative

The No Action Alternative would be the denial of the requested ROW. This means that the Project would not be authorized across federal lands. Neither the benefits nor the impacts outlined in this EA would be realized. Truck traffic and congestion would not be alleviated to the extent that would be afforded by construction of the proposed pipeline.

2.4 Alternatives Considered but Eliminated From Detailed Analysis

2.4.1 Market Alternatives

Currently, there is one refinery in North Dakota, owned by Tesoro, and located near Mandan. Tesoro announced on March 21, 2011, that it plans to increase daily capacity at its North Dakota refinery by 10,000 barrels, to 68,000 bpd. The expansion is scheduled to be completed in 2012. It would increase take-away capacity by 10,000 bpd.

For some time, there have been efforts to increase refinery capacity locally which have been supported by private industry and the public sector including the State of North Dakota, the U.S. Department of Energy National Energy Technology Laboratory (NETL), and the North Dakota Association of Rural Electric Cooperatives (NDAREC). To date, studies to determine the feasibility of increasing oil refining capacity in North Dakota have been inconclusive. According to the Executive Summary of Pipelines and Refined Products Report presented to the North Dakota Industrial Commission (NDIC) in 2008, a new refinery with reasonable economy of scale would likely cost at least $3 billion dollars, excluding pipeline infrastructure and the permitting process for a new refinery could take at least 5 to 10 years. A 2010 North Dakota refining capacity study prepared for NETL by NDAREC concluded that a 34,000 bpd diesel and naphtha refinery costing about $700 million may be feasible except for having a less than acceptable project return to attract private industry investment.

Recently, construction of the Thunder Butte Oil Refinery was approved by the EPA on the Fort Berthold Indian Reservation. However, it is not yet under construction and would not meet BakkenLink's Interests and Objectives, including the schedule. Even with the Mandan Refinery expansion and the construction of the Thunder Butte Refinery in North Dakota to access new local crude supplies, there would be excess crude that must be transported to other refining centers outside of the state as production from Williston Basin is expected to grow from 420,000 bpd to possibly 1,000,000 bpd over the next 5 years. There are no viable local market alternatives to the Project. Pipeline construction must keep pace with this production growth.

2.4.2 North Dakota Pipeline Alternatives

Currently, there are no viable North Dakota pipeline alternatives to the Project within the Project vicinity **that would meet BakkenLink's interest and objectives and those of its prospective customers**. The Project would enhance overall utilization of the existing pipeline capacity within North Dakota as well as adding needed capacity in new areas of the Bakken oil production area. The Project would place new pipeline capacity in areas where traditionally there has not been significant oil production. Currently, producers with leases along and around U.S. Highway 85 and State Highway (SH) 23 south and east of Watford City, respectively, have to truck crude long distances to access a pipeline receipt facility. The Project would bring pipeline capacity closer to these leases and shorten the trucking distance for these producers.

2.4.3 Truck and Rail Alternatives

The trucking alternative is deemed unacceptable as additional trucking would overburden the existing public road capacity.

Rail transportation, especially when fed by local pipelines, can significantly supplement takeaway capacity. BakkenLink has indicated its support of development of additional crude-by-rail facilities, especially on the south side of the Bakken Play, along the BNSF Railway Company (BNSF) rail line that extends between Dickinson and Fryburg, and contends that pipelines offer a safe, reliable and efficient means to transport crude oil to rail facilities. As noted previously, the Project would interconnect to a proposed rail facility at Fryburg.

BakkenLink evaluated two primary alternatives for termination of the pipeline, both at proposed rail facilities where the oil would be transported by rail to market. The two proposed rail loading facility alternatives were located near Fryburg, North Dakota (Fryburg Rail Terminal Facility [FRTF]), and 2.5 miles southwest of Dickinson, North Dakota (Bakken Oil Express Rail Terminal Facility [BOERTF]).

To extend the BakkenLink pipeline to the BOERTF as opposed to the proposed Fryburg facility, it was determined that approximately 15 miles of additional pipeline would be required compared with terminating the pipeline at the FRTF. These 15 miles of pipeline would result in an additional 181 acres of agricultural land being disturbed based on the use of a 100-foot-wide construction ROW.

The costs associated with this additional 15 miles of pipeline also were evaluated. Using an average construction cost of $850,000 per mile of pipeline constructed (the average cost per mile for the BakkenLink pipeline) the additional direct construction costs assumed by BakkenLink associated with this extra pipeline would be $12,750,000. In addition to direct construction costs, land acquisition costs for acquiring a 50-foot-wide permanent easement for the additional pipeline at a rate of $100 per rod to would result in an additional $480,000. In total, the additional costs that would be incurred by BakkenLink for construction of the additional pipeline to extend to the BOERTF would be approximately $13,230,000.

Another factor that was taken into consideration for the termination of the BakkenLink pipeline was the pipeline may be extended to connect to the Keystone XL pipeline near Baker, Montana if the Keystone XL pipeline is ultimately approved and constructed. Changing the termination point to the BOERTF instead would require 15 miles of parallel pipeline since the location of the connection point to the Keystone XL pipeline is located approximately 80 miles southwest of the FRTF, which is nearly the exact opposite direction as compared to the location of the BOERTF facility.

After evaluation of both alternatives, the FRTF was chosen as the most feasible alternative, and the BOERTF alternative was eliminated. This decision was based on the increased length of pipeline that would be required to reach this facility, the additional associated land impacts and construction costs.

2.4.4 Route Alternatives

BakkenLink evaluated several options for the proposed route. Each option was considered in light of study of underserved Bakken development areas, economics, engineering design, feasibility to construct, and environmental impacts. The location of the proposed route was selected to have minimal effects on resources and residents. Key routing considerations included:

- Location and number of receipt facilities in relation to existing and proposed oil field production facilities;
- The crossing of the Missouri River west of Williston;
- The crossing of the Missouri River north of Watford City; and
- The pipeline route across the LMNG.

The proposed route design for the Project would provide frequent origination points (i.e., receipt facilities) in the most prolific and active parts of the middle Bakken and upper Three Forks development (the Catchment Area), but also would open up new areas that are not currently accessible to pipeline service, especially between Johnson's Corner and Watford City and between Watford City and Belfield. The Catchment Area is defined as an area that encompasses all of the lands with the highest "original oil-in-place" estimates in the Bakken Field. The 12-inch-diameter trunk line allows for economic expansion opportunities. This need for expansion in these areas is supported by a proprietary study conducted by the Ross Smith Energy Group, a leading North American oil and gas investment research firm, to estimate total recoverable Bakken crude oil resources and future production.

The Missouri River crossing is a key logistical consideration. Several crossing locations were evaluated during preliminary design and planning of the Project. Crossing locations west of Williston, at New Town, and a location approximately 10 miles west of the proposed location, were evaluated. BakkenLink presented the different crossing location options for discussion at meetings with the USACE and USFS on November 2 and December 9, 2010, and on February 9, 2011. In these meetings, the USACE and USFS identified the current crossing location as their preferred route due to the presence of existing pipelines at that location. Other parties reportedly also have been exploring the same river crossing location and certain advantages exist for locating their pipeline adjacent to this route.

Two different routing options through/around the LMNG were evaluated. The first generally followed the proposed Bridger pipeline route around the east side of the LMNG. BakkenLink did not choose this route primarily due to needs of the prospective customers and other operators and the increased length of larger diameter pipe needed to reach the end point, which added greater overall environmental impacts.

The second routing option was considered at the request of the USFS. Representatives of USFS initially indicated the preference for a route paralleling the Northern Border Pipeline Company natural gas pipeline, northeast of the proposed route, instead of the more direct route south of Watford City to Belfield. Again, this alternate route would result in increased mileage of larger diameter pipe and; therefore, would have greater environmental impacts.

2.5 Comparison of the Proposed Action and No Action Alternative

Table 2-9 summarizes and compares the environmental impacts between the Proposed Action and No Action Alternative. Detailed descriptions of impacts are presented in Chapter 4.0, Environmental Consequences. The summarized impacts assume BakkenLink's environmental protection measures but the absence of potential mitigation measures. Implementation of the potential monitoring and mitigation measures identified in Chapter 4.0 potentially would further reduce impacts.

2.6 Agency Preferred Alternative

The agency preferred alternative is not a final agency decision; rather, it is an indication of the agencies' preference. The BLM has selected a preferred alternative based on the analysis in this EA; this preferred alternative is the alternative that best fulfills the agency's statutory mission and responsibilities, considering economic, environmental, technical, and other factors.

The BLM has determined that the preferred alternative is the Proposed Action as described in Section 2.2, Proposed Action, excluding the Lake Sakakawea crossing, which extends from MP 9.7 to MP 12.0 (2.1 miles). This segment of the Project has been excluded from the preferred alternative due to the potential adverse effects to special status wildlife species (i.e., pallid sturgeon, piping plover, interior least tern) and designated critical habitat for the piping plover as a result of pipeline construction. As a result of excluding the Lake Sakakawea crossing from the Project, BLM has determined, in consultation with BakkenLink, that the Project could still be viable and partially meet BakkenLink's interests and objectives, if the section from the Arrow Midstream Receipt Facility to the Beaver Lodge Receipt Facility was not constructed. If the segment from the Arrow Midstream Receipt Facility to the Fryburg Rail Facility was constructed, and everything north of Arrow Midstream was not, four of the six Receipt Facilities would still allow receipt and delivery of crude oil to Fryburg. BakkenLink has indicated that this would still be a feasible project. This preferred alternative would include the implementation of the environmental protection measures identified in **Table 2-5**, CMRP, and resource-specific mitigation measures identified in Chapter 4.0 of this EA.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Air Quality		
	Construction Construction equipment would emit gaseous criteria pollutants and particulates as a result of tailpipe emissions. Construction equipment also would cause fugitive dust emissions from disturbed areas and along paved and unpaved roads. CO_2 emissions are expected to be far below 25,000 tons per year, which would be seen as a significant level of emissions. The CO_2 emitted from construction equipment is expected to be only a small fraction of this amount and a minor contribution to national and statewide CO_2 emissions. Negligible impacts to air quality from the operation of heavy construction equipment are expected. Operation Total VOC emissions would be 616.30 lbs/year, per tank, for a total of 1.85 tpy of VOC emissions from all six 30,000 bbl storage tanks at the receipt facilities. Given that all HAPs emitted would be only a small fraction of VOC emissions, the emissions would not approach major source limits; therefore, negligible impacts to air quality would be expected. It is expected that operation of the Project would preclude the need for approximately 300 oil tanker trucks to haul oil each day. Using the conservative assumptions that each truck hauls 200 barrels, a pipeline capacity of 65,000 barrels per day, and an average roundtrip of 80 miles, approximately 24,000 truck miles per day would be eliminated from western North Dakota roads. This would be expected to provide positive benefits in terms of both traffic congestion and air quality.	Project impacts to air quality would not occur.
Geology and Minerals		
Geology	Construction Construction activities would include disturbances to the topography along the Project route and at associated aboveground facilities due to grading and trenching that may result in slope instability. Since the Project route crosses landslide prone areas on either side of Lake Sakakawea and Little Missouri River crossings, construction activities could result in instability through undercutting of slopes or changes in drainage and surface flow. Operation Operation of the Project would not alter the geological and physiographic conditions. Because there are no identified active faults along the Project route, no impacts due to ground deformation due to fault movement are expected. The Project is in an area not likely to experience strong ground motion during a maximum credible earthquake, therefore impacts due to ground motion are not anticipated.	Project impacts to geologic and mineral resources would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Minerals	Construction Construction would have very minor and short-term impacts on current mineral extraction activities due to the temporary and localized nature of pipeline construction activities. Construction of the Project is not expected to impact gravel mining operations. Because oil and gas are produced at depths considerably deeper than the excavation depth, construction of the Project would not be expected to affect the oil and natural gas producing formations. Operation The Project does not pose a hindrance for accessing oil and gas resources. Impacts on future mineral development would not constitute a substantial loss of mineral resource or mineral availability because of the narrow, linear nature of the pipeline ROW relative to the expanse of areas with mineral resource potential.	
Paleontological Resources		
	Construction Some scientifically valuable fossils may be disturbed and lost during excavation and grading over areas that are expected to be disturbed. As a consequence, there would be a small incremental loss of fossil material that would be offset by the material that is recovered and preserved for scientific study purposes. Protection measures described in the Unanticipated Discoveries Plan would be implemented to minimize impacts to paleontological resources. Operation Normal operation of the Project is not expected to disturb important paleontological resources. If there are maintenance activities that would result in surface disturbance, it would occur within previously disturbed ROW and not likely to affect paleontological resources. Therefore, there would be no impacts to paleontological resources during operation of the Project.	Project impacts to paleontological resources would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Soils		
	Construction A small percentage of prime farmland would be impacted, during construction of the pipeline. With proper topsoil handling techniques, impacts to prime farmland are expected to be short term. No permanent facilities would be constructed on prime farmland. Two receipt facilities and a pipe storage yard would impact farmland of statewide importance. Soil quality and long-term productivity would be impacted permanently at these locations. Soil compaction and rutting would likely result from the movement of heavy construction vehicles along the construction ROW, facilities, ATWS, receipt and delivery points, and on temporary access roads. Most of the impacts to soil resources would be short term, since all disturbed areas not needed for operations would be reclaimed within 1 year of construction. Operation Some soil loss would result from wind and water erosion until erosion control measures begin to take effect. Very small scale, isolated surface disturbance impacts, resulting in accelerated erosion, soil compaction, spills, and related reductions in the productivity of desirable vegetation could result from pipeline maintenance traffic and incidental repairs. Impacts related to excavation and topsoil handling are not likely to occur. Effects to soils would include the long-term loss of 80.2 acres of soils and soil productivity from the construction and operation of aboveground facilities (e.g., receipt facilities, MLVs).	Project impacts to soils would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Water Resources		
Surface Water	Construction Surface water and groundwater quality could be adversely affected by incidental spills, pipeline ruptures, or leaks. Trenching, stream crossing disturbance, and discharges of hydrostatic test water may locally increase runoff, turbidity, and sediment transport. Re-mobilization of sediments could disperse existing contaminants. Appropriate environmental practices, permit compliance, and pipeline features (e.g., valves, SCADA) would avoid or mitigate these potential effects. Alternative temporary uses of existing surface or groundwater supplies would occur during construction, through arrangements with existing water rights holders. Operation During operations, impacts to surface water resources would occur if a pipeline leak or rupture released crude oil. The severity and duration of such an impact would depend on its location, the volume of oil released, and the spill response and countermeasures implemented. Pipeline safety provisions and monitoring procedures and equipment would minimize the potential for such impacts during operations. Remotely controlled MLVs on both sides of Lake Sakakawea, the Little Missouri River, the Green River, and on the perimeter of USFS-administered lands would help to lessen, but not eliminate, potential impacts to these resources in the event of a spill or rupture.	Project impacts to surface water and groundwater resources would not occur.
Groundwater	Construction Construction and operation of the Project is not expected to adversely affect groundwater resources in the Project area or its vicinity. No unpermitted withdrawals of groundwater would occur. Therefore, impacts to groundwater resources due to construction of the Project are not anticipated. Operation Burial depths at stream and river crossings would counteract the potential for pipeline rupture or leaks at those locations. Concrete coating at Lake Sakakawea, and rock covers and/or flexible concrete mats (placed as needed in areas having higher levels of marine traffic) would prevent pipeline damage and potential releases during operations. In addition, the SCADA system and periodic pipeline inspections would monitor conditions during operations. If pipeline releases occurred, responses would be triggered to address impacts to water resources. All of these Project features would avoid residual impacts or reduce their potential to negligible levels.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Vegetation		
	Construction Direct impacts from Project-related activities would include the temporary loss of vegetation as a result of trampling/compaction, clearing/trenching/blading of surface cover, and direct removal of aboveground and belowground vegetation as a result of construction. Temporary disturbances would be limited to the agriculture, developed, grassland, and wetland/waterbody vegetation cover types within the construction ROW. Long-term impacts (greater than 20 years) would be limited to the shrubland and woodland vegetation cover types within the construction ROW. Operation Permanent disturbances as a result of pipeline operation and maintenance activities would be limited to vegetation communities located within the permanent aboveground facilities. A long-term loss of 80.2 acres of vegetation associated with the operation of aboveground facilities (e.g., receipt facilities, MLV locations, launcher/receiver facilities, and interconnection facilities) would occur.	Project impacts to vegetation would not occur.
Wetlands and Floodplains		
	Construction Direct impacts from Project-related activities would include the temporary loss of 3.3 acres of wetland vegetation, hydric soils, and potential hydrologic functionality as a result of trampling/compaction, clearing/trenching/blading of surface cover, and direct removal of aboveground and belowground vegetation and substrate. No permanent aboveground facilities would be located within a wetland; therefore, all impacts to wetland resources would be considered temporary in nature following the completion of successful reclamation. Operation No permanent facilities would be located within wetlands; therefore, no impacts are anticipated as a result of Project operation. If an accidental spill were to occur within a wetland during operation, BakkenLink would employ the spill prevention, contingency plans, and spill containment and countermeasures outlined within the CMRP.	Project impacts to wetlands and floodplains would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Noxious Weeds and Invasive Species		
	Construction Substantial increases in weed prevalence within the Project area are not anticipated; however, despite efforts to prevent the proliferation of noxious weed species, it is possible that construction activities could result in the spread or introduction of noxious weed species along the ROW or that weed species could be transported into areas that were relatively weed-free. Implementation of the Project's Noxious Weed and Aquatic Nuisance Species Control Plan (POD, Appendix VI) would minimize the introduction and spread of noxious weed species within the Project area. Operation Noxious weed species can be introduced to the Project area via weed-contaminated vehicles, equipment, and erosion control devices (e.g., straw bales) and, if not controlled, can displace native plant species, rendering infested areas unproductive. Impacts to vegetation as a result of noxious weed invasions are anticipated to be minimal during Project operation with the implementation of the Noxious Weed and Aquatic Nuisance Species Control Plan, which includes post-reclamation monitoring and noxious weed control measures.	Impacts to vegetation as a result of establishment and spread of noxious weeds and invasive species would not occur.
Wildlife and Fisheries		
Management Indicator Species	Construction Three MIS have been identified for the Project: sharp-tailed grouse, greater sage-grouse, and black-tailed prairie dog. Impacts to sharp-tailed grouse are discussed under Small Game Species. No greater sage-grouse leks occur within the Project area; therefore, impacts to the species are not anticipated. No black-tailed prairie dog colonies occur within the Project area; therefore, impacts to the species are not anticipated.	Project impacts to wildlife and fisheries would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Big Game Species	Construction Impacts to big game habitat (e.g., mule deer, white-tailed deer, elk, pronghorn, Rocky Mountain bighorn sheep, and mountain lion) include the temporary loss of potential forage and vegetative cover (native and reclaimed vegetation) and increased habitat fragmentation within the Project area. Impacts to the Rocky Mountain bighorn sheep and its habitat are discussed in the Special Status Species section. No other big game critical ranges are identified within the Project area. A total of 1,444.2 acres of potential big game habitat would be temporarily impacted by Project construction. This includes 754.9 acres of grassland, 636.7 acres of agricultural land, 25.2 acres of wetland/waterbody habitat, 21.6 acres of woodland, and 5.8 acres of shrubland. Operation Project operation may result in direct and indirect impacts to big game species. Direct mortality to individuals may result from collisions with maintenance vehicles. In addition, big game species may experience increased hunting and poaching pressure due to increased public access. Potential indirect impacts would include displacement of individuals and decreased breeding success due to increased levels of noise and human activity. Disturbances associated with construction activities would be temporary, and it is assumed that animals would return to the area following their completion. Based on the amount of available habitat within the Project area, impacts to big game species are anticipated to be minimal; limited primarily to displacement from areas of human activity and habitat alteration.	
Small Game Species	Construction Direct impacts to small game would include mortality or displacement as a result of construction activities. Indirect impacts include habitat loss, alteration, and fragmentation. Disturbance from increased levels of noise and human activity also would indirectly impact small game species. Project construction would result in the temporary loss of 1,444.2 acres of potential small game habitat, including 754.9 acres of grassland, 636.7 acres of agricultural land, 25.2 acres of wetland/waterbody habitat, 21.6 acres of woodland, and 5.8 acres of shrubland until reclamation has been completed and vegetation is re-established within the disturbance areas. In addition, construction-related impacts to waterfowl would include the temporary loss of 25.2 acres of wetland/waterbody habitat within the Project area. Temporary loss of habitat would reduce productivity for the current breeding season. However, due to the large amount of suitable habitat in the Project area, impacts to small game species are anticipated to be low. Small game species that may occur in the Project vicinity are included in **Appendix A**.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
	Operation Project operation may result in direct and indirect impacts to small game species. Direct impacts may result if maintenance activities are conducted in suitable habitat during the breeding season. Direct mortality to individuals may result from collisions with maintenance vehicles. Local populations may experience higher levels of hunting and poaching pressure due to improved public access. Other potential indirect impacts would include displacement of individuals, and decreased breeding success due to increased levels of noise and human activity. Permanent impacts would occur to 75.5 acres of potential small game habitat, including 67.8 acres of agricultural land, 7.6 acres of grassland, and 0.1 acre of woodland as a result of the construction of aboveground facilities.	
Sharp-tailed Grouse	Construction Four active sharp-tailed grouse leks occur along the Project route. Project construction during the breeding season may impact the sharp-tailed grouse by destroying nests, causing nest abandonment, or causing injury or direct mortality to the young. Impacts also may occur to sharp-tailed grouse breeding habitat, including the loss of lekking grounds and brood-rearing habitat. No construction, operation, or maintenance activities would be allowed within 0.25 mile of the identified sharp-tailed grouse leks on USFS-administered land during the breeding season (**March** 1 through **June** 15). Therefore, impacts to breeding sharp-tailed grouse are anticipated to be low.	
	Operation Project operation may result in direct and indirect impacts to sharp-tailed grouse. Direct impacts may result if maintenance activities are conducted in suitable habitat during the breeding season. Direct mortality to individuals may result from collisions with maintenance vehicles. Potential indirect impacts would include displacement of individuals and decreased breeding success due to increased levels of noise and human activity.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Nongame Species	Construction Construction activities may result in mortalities of less mobile or burrowing nongame species (e.g., small mammals, and reptiles) within the ROW, as a result of crushing by construction vehicles and equipment. Indirect impacts include habitat loss, alteration, and fragmentation. Increased levels of noise and human activity also would indirectly impact nongame species. Project construction would result in the temporary loss of 1,444.2 acres of potential nongame habitat, including 754.9 acres of grassland, 636.7 acres of agricultural land, 25.2 acres of wetland/waterbody habitat, 21.6 acres of woodland, and 5.8 acres of shrubland. Due to the large amount of suitable habitat in the Project area impacts to nongame species are anticipated to be low. Nongame species that may occur in the Project vicinity are included in **Appendix A**. Operation Project operation may result in direct and indirect impacts to nongame species. Direct impacts may result if maintenance activities are conducted in suitable habitat during the breeding season. Direct mortality to individuals may result from collisions with maintenance vehicles. Other potential indirect impacts would include displacement of individuals, and decreased breeding success due to increased levels of noise and human activity. Permanent impacts would occur to 75.5 acres of potential nongame habitat, including 67.8 acres of agricultural land, 7.6 acres of grassland, and 0.1 acre of woodland as a result of the construction of aboveground facilities.	
Migratory Birds	Construction Migratory birds that utilize various habitats in the Project area may be impacted by construction activities. Direct impacts to avian species include mortality, nest destruction, displacement, and disturbance from increased levels of noise and human activity. Indirect impacts to migratory birds include habitat loss, alteration, and fragmentation. Project construction would result in temporary impacts to 1,444.2 acres of potential migratory bird habitat, including 754.9 acres of grassland, 636.7 acres of agricultural land, 25.2 acres of wetland/waterbody habitat, 21.6 acres of woodland, and 5.8 acres of shrubland until reclamation has been completed and vegetation is re-established. BakkenLink has committed to conduct pre-construction surveys for active migratory bird nests during the breeding season. To minimize impacts, migratory birds and their nests would be avoided during construction of the pipeline. Clearing and grubbing of the Project ROW would occur in the fall or winter to avoid potential impacts to bird nests. Consultation with the USFWS regarding migratory birds would be continued during construction activities. Therefore, impacts to migratory birds are anticipated to be low. Migratory bird species that may occur in the Project vicinity are included in **Appendix A**.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
	Operation Project operation may result in direct and indirect impacts to migratory birds. Direct impacts may result if maintenance activities are conducted during the breeding season. Mortality to individuals or destruction of nests may result from being crushed by, or colliding with maintenance vehicles. Permanent impacts would occur to 75.5 acres of potential migratory bird habitat, including 67.8 acres of agricultural land, 7.6 acres of grassland, and 0.1 acre of woodland as a result of the construction of aboveground facilities. Potential impacts to bird species may occur from a spill or leak of crude oil from the pipeline. Direct contact with crude oil would result in oiling of plumage; ingestion of crude oil from contaminated plumage and prey; and transfer of crude oil to eggs and young. The probability of adverse effects to bird species is unlikely, due to the low probability of a spill and the low probability of the spill directly impacting individuals.	
Raptors	Construction Direct impacts to raptor species may include mortality and displacement. Indirect impacts include the loss or alteration of habitat, reduction in prey base, and disturbance from increased levels of noise and human activity. Project construction would result in temporary impacts to 1,444.2 acres of potential raptor habitat, including 754.9 acres of grassland, 636.7 acres of agricultural land, 25.2 acres of wetland/waterbody habitat, 21.6 acres of woodland, and 5.8 acres of shrubland until reclamation has been completed and vegetation is re-established. To minimize impacts, raptors and their nests would be avoided during construction of the pipeline. Clearing and grubbing of the Project ROW would occur in the fall or winter to avoid potential impacts to raptor nests. Distance buffers for active raptor nests vary by species, ranging from 0.25 mile to 0.5 mile. Consultation with the USFWS regarding migratory birds, including raptors, would be ongoing during construction activities. Therefore, impacts to raptor species are anticipated to be low. Raptor species that may occur in the Project vicinity are included in **Appendix A**. Operation Project operation may result in direct and indirect impacts to raptors. Direct impacts may result from collision with maintenance vehicles. Two 0.25-mile overhead transmission lines would incrementally increase collision and electrocution potential for raptors and other migratory birds. Indirect impacts would include displacement of individuals, and decreased breeding success due to increased levels of noise and human activity. Permanent impacts would occur to 75.5 acres of potential raptor habitat, including 67.8 acres of agricultural land, 7.6 acres of grassland, and 0.1 acre of woodland as a result of the construction of aboveground facilities.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Reptiles	Construction Construction activities may result in direct and indirect impacts to less mobile species, such as reptiles. Direct mortality to individuals may result from crushing of individuals or burrows by vehicles and equipment. Indirect impacts may include habitat loss, alteration, and fragmentation; and disturbance from increased levels of noise and human activity. Project construction would result in temporary impacts to 1,444.2 acres of potential reptile habitat, including 754.9 acres of grassland, 636.7 acres of agricultural land, 25.2 acres of wetland/waterbody habitat, 21.6 acres of woodland, and 5.8 acre of shrubland until reclamation has been completed and vegetation is re-established. However, due to the presence of suitable habitat adjacent to the disturbed areas and the temporary nature of Project construction, impacts to reptiles are anticipated to be low. Reptile species that may occur in the Project vicinity are included in **Appendix A**.	
	Operation Project operation may result in direct and indirect impacts to reptiles. Direct mortality to individuals may result from crushing of individuals or burrows by maintenance vehicles. Potential indirect impacts would include displacement of individuals, and decreased breeding success due to increased levels of noise and human activity. Permanent impacts would occur to 7.5 acres of potential reptile habitat, including 67.8 acres of agricultural land, 7.6 acres of grassland, and 0.1 acre of woodland as a result of the construction of aboveground facilities.	
Aquatic Resources	Construction The Green and Little Missouri river crossings would be constructed using HDD methods. All other perennial and intermittent streams and wetland crossings would be constructed using open cut methods. The Lake Sakakawea crossing would be constructed with a trench/pull technique. Project construction would result in temporary impacts to 25.2 acres of wetland/waterbody habitat, until reclamation has been completed and vegetation is re-established. It is unlikely that a potential spill would affect terrestrial species, due to the low probability of a spill and the behavioral avoidance of a spill area by wildlife species. Impacts to aquatic resources from potential fuel or other petroleum product spills are not anticipated. Water withdrawal from municipal water sources for hydrostatic testing would not affect aquatic resources.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
	Operation Project operation may result in direct and indirect impacts to aquatic species. Direct mortality to individuals may result from maintenance activities conducted near waterbodies. Indirect impacts would include displacement of individuals, increased sedimentation, and degradation of habitat. Potential impacts to aquatic species may occur from a spill or leak of crude oil from the pipeline. The probability of adverse effects to aquatic species is unlikely, due to the low probability of a spill and the low probability of the spill directly impacting individuals.	
Special Status Species		
Plants	**Slimleaf Goosefoot *(Chenopodium pallescens)*, Blue Lips *(Collinsia parviflora)*, Nodding Wild Buckwheat *(Eriogonum cernuum),* Sand Lily *(Leucocrinum montanum),* Golden Stickleaf *(Mentzelia pumila),* Alyssum-leaved Phlox *(Phlox alyssifolia),* and Alkali Sacaton *(Sporobolus airoides)*** Although suitable habitat was identified, no individuals or populations were identified within the Project area; therefore, no impacts to these species are anticipated. **Missouri Pincushion Cactus *(Escobaria missouriensis)*** Twenty-four populations (containing a total of 100 individuals) were identified within the survey area; however, only one population (containing one individual) is located within the Project area. This population is located on the working side of the construction ROW and would be fenced off from direct construction disturbance. No individuals or populations would be impacted as a result of construction or operational activities. **Lance-leaf Cottonwood *(Populus acuminata)*** One lance-leaf cottonwood population was identified within the Project area; however, the population is located approximately 220 feet from the pipeline centerline. **Additionally, this population is located within the HDD construction area; therefore, n**o impacts to this population are anticipated. **Stemless Townsend Daisy *(Townsendia exscapa)* and Hooker's Townsendia *(Townsendia hookeri)*** Four *Townsendia* sp. populations were identified within the Project area; however, the populations are located between 39 and 85 feet from the pipeline centerline. Each population is located outside of the construction and operation disturbance footprints. The populations would be noted on alignment sheets and flagged/marked in the field for avoidance. No impacts to these populations are anticipated.	Project impacts to special status species would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Wildlife (Mammals)	Rocky Mountain Bighorn Sheep *Construction* A Rocky Mountain bighorn sheep herd, known as the Long X herd, inhabits the Project area in central McKenzie County. The Project would directly impact approximately 24.6 acres of a bighorn sheep lambing area for the Long X herd on USFS lands between MP 65.5 and MP 76.7. Impacts to this herd would include the temporary loss of potential forage and cover (native vegetation and previously disturbed vegetation) and an increase in habitat fragmentation within the Project area. The loss of available woodland/shrubland vegetation would be long-term (greater than 20 years). However, herbaceous species may become established within 3 to 5 years, depending on reclamation success, weather conditions, and grazing management practices in the Project area. Based on the implementation of environmental protection measures, construction impacts to Rocky Mountain bighorn sheep are anticipated to be minimal. *Operation* Project operation may result in direct and indirect impacts to bighorn sheep. Direct mortality to individuals may result from collisions with maintenance vehicles. Indirect impacts include habitat reduction and fragmentation as a result of ROW maintenance activities. Indirect impacts would include displacement of individuals and decreased breeding success due to increased noise levels and human activity.	
	Black-tailed Prairie Dog *Construction* No black-tailed prairie dog colonies have been identified within the Project area. However, suitable habitat exists within the Project area and the species is known to occur near the Project area, in the LMNG complex. Impacts to this species, if present, would include direct mortalities of individuals if burrows are crushed by construction vehicles or equipment. Indirect impacts would result from increased noise levels and human activity. *Operation* If black-tailed prairie dog colonies become established along the Project ROW in the future, direct and indirect impacts during Project operations may occur. Direct mortality to individuals may result from collisions with maintenance vehicles. Indirect impacts may include habitat fragmentation as a result of ROW maintenance activities.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Bird Species Associated with Wetland/ Waterbody Habitat	Whooping Crane *Construction* Indirect impacts may result from individual migrants being flushed from the Project area during construction. Based on the rarity of the species and the lack of occurrence data for the Project area, potential impacts from encountering and flushing a migrating whooping crane from the Project area would be minimal. Minor impacts to stop-over habitat at Lake Sakakawea would occur from the pipeline-pull construction method that would be used for the crossing. *Operation* Project operation may result in indirect impacts to the whooping crane, including habitat reduction and fragmentation as a result of ROW maintenance activities. Other potential indirect impacts would include displacement and increased stress to individuals during migration by increased noise levels and human activity. The construction of new overhead electrical powerline segments would incrementally increase the collision potential for migrating whooping cranes in the Project area. A spill or leak of crude oil at Lake Sakakawea may directly impact the whooping crane and its habitat. **BakkenLink has committed to mark all new overhead transmission lines within 1 mile of suitable whooping crane stop-over habitat with visual marking devices such as aviation marker balls, swinging plates, spiral vibration dampeners, or swan flight diverters to make the lines more visible. To further mitigate the increased risk of a strike from the proposed new transmission lines, BakkenLink is providing funds to the North Dakota Natural Resources Trust to purchase suitable wetland stop-over habitat for whooping crane conservation purposes. This protection measure was offered by the USFWS in lieu of marking an equal amount of additional existing lines within 1 mile of suitable stop-over habitat in the 95 percent migration corridor.**	
	Interior least tern *Construction* Direct impacts to breeding terns and their habitat may occur as a result of the pipeline-pull method, which would be utilized at the Lake Sakakawea crossing. This construction method would result in the incremental reduction of potentially suitable breeding and foraging habitat during construction activities. Indirect impacts, such as displacement and decreased breeding success, may result from increased noise levels and human activity, if breeding terns are present within 0.25 mile of the Project area. The Little Missouri River crossing would be constructed using the HDD method with a minimum setback of approximately 200 feet, therefore surface disturbance to potential habitat would not occur. If interior least terns are present in the vicinity, impacts from	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
	construction-related noise would occur.	
	Operation Project operation may result in indirect impacts including the displacement and decreased breeding and foraging success caused by increased noise levels and human activity. A spill or leak of crude oil at Lake Sakakawea may directly impact the interior least tern and its habitat.	
	Piping Plover *Construction* Designated critical habitat for the piping plover is present along the Missouri River at the Lake Sakakawea crossing. Potential habitat for this species also exists at the Little Missouri River crossing. Direct impacts to breeding habitat and designated critical habitat are possible as a result of the pipeline-pull method that would be utilized at the Lake Sakakawea crossing. This construction method would result in the incremental reduction of potentially suitable breeding and foraging habitat within the Project area during construction**.**Indirect impacts may result from increased noise levels and human activity if breeding plovers are present within 0.25 mile of the Project area. The Little Missouri River crossing would be constructed using the HDD method, with a minimum setback of approximately 200 feet. Therefore, surface disturbance to potential habitat would not occur. If piping plovers are present in the vicinity, impacts from construction-related noise would occur. *Operation* Project operation may result in indirect impacts to the piping plover. These include displacement and decreased breeding and foraging success caused by increased noise levels and human activity. A spill or leak of crude oil at Lake Sakakawea may directly impact the piping plover and its habitat.	
	Bald Eagle *Construction* Construction-related impacts to the bald eagle are not anticipated. *Operation* Bald eagles are not known to occur within or near the Project area; therefore, impacts from Project operation are not anticipated.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Bird Species Associated with Grassland Habitat	<u>Sprague's Pipit, Baird's Sparrow, and Long-billed Curlew</u> *Construction* Direct and indirect impacts to the Sprague's pipit, Baird's sparrow, and long-billed curlew would include mortalities or displacement related to pipeline construction if construction occurs during the breeding season (February 1 through July 15); habitat loss, alteration, and fragmentation; and disturbance from increased noise levels and human activity. In addition to habitat loss, reductions in bird population densities also may be attributed to a reduction in habitat quality produced by elevated noise levels. *Operation* Project operation may result in direct and indirect impacts to the Sprague's pipit, Baird's sparrow, and long-billed curlew. Direct impacts may result if maintenance activities are conducted in suitable habitat during the breeding season. Direct mortality to individuals or nests may result from being crushed by, or colliding with maintenance vehicles. Indirect impacts may include habitat reduction and fragmentation as a result of ROW maintenance activities. Other potential indirect impacts include displacement of individuals, and decreased breeding success due to increased noise levels and human activity.	
	<u>Burrowing Owl</u> *Construction* Potential impacts to the burrowing owl, if present, would result from the incremental reduction of suitable habitat within the Project area during construction activities. Direct mortality to individuals or nests may result from being crushed by, or colliding with maintenance vehicles. Construction activities also would cause an increase in temporary, short-term noise levels and human activity, which may potentially displace individual owls from the Project area and decrease breeding success. Potential for construction-related impacts to the species are low due to the lack of primary nesting habitat (i.e., prairie dog colonies). *Operation* Project operation may result in direct and indirect impacts to the burrowing owl, if present. Direct impacts may result if maintenance activities are conducted during the breeding season (May 1 to September 15). Direct mortality to individuals or nests may result from being crushed by, or colliding with maintenance vehicles. Indirect impacts would include habitat reduction and fragmentation as a result of ROW maintenance activities. Other potential indirect impacts would include displacement of individuals, and decreased breeding success due to increased noise levels and human activity.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Bird Species Associated with Shrubland Habitat	Loggerhead Shrike *Construction* Potential direct and indirect impacts to the loggerhead shrike would include individual mortalities or displacement related to pipeline construction if construction occurs during the breeding season (February 1 through July 15); habitat loss, alteration, and fragmentation; and increased noise levels and human activity. Potential impacts to the loggerhead shrike as a result of elevated noise levels are previously described. *Operation* Project operation may result in direct and indirect impacts to the loggerhead shrike. Direct impacts may result if maintenance activities are conducted in during the breeding season. Direct mortality to individuals or nests may result from being crushed by, or colliding with maintenance vehicles. Indirect impacts would include habitat reduction and fragmentation as a result of ROW maintenance activities. Other potential indirect impacts would include displacement of individuals, and decreased breeding success due to increased noise levels and human activity.	
Butterfly Species	*Construction* Vegetation removal would cause direct impacts to potential habitat as a result of vegetation removal for the Dakota skipper, Ottoe skipper, regal fritillary, and tawny crescent. Temporary impacts would occur to 807.5 acres of potential butterfly habitat, including 754.9 acres of grassland, 25.2 acres of wetland/waterbody habitat, 21.6 acres of woodland, and 5.8 acres of shrubland. Impacts to butterfly species are expected to be minimal. *Operation* Permanent impacts would occur to 7.7 acres of potential butterfly habitat, including 7.6 acres of grassland, and 0.1 acre of woodland as a result of the construction of aboveground facilities.	
Fish Species	Pallid Sturgeon *Construction* The pallid sturgeon may be present at the Lake Sakakawea crossing location. The proposed methodology for this crossing is based on the pipeline-pull construction method. Therefore, direct impacts to the pallid sturgeon and its habitat are possible.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
	Operation Routine pipeline operations would not likely impact the pallid sturgeon. In the improbable event of a spill or leak in Lake Sakakawea, exposure to crude oil may result in adverse toxicological effects to the species. However, the probability of adverse effects to the pallid sturgeon is unlikely due to the low probability of a spill or leak of a sufficient amount to cause toxic effects in Lake Sakakawea. Further, if a spill or leak event were to occur, federal and state laws would require cleanup of an event of sufficient size to potentially impact pallid sturgeon.	
	<u>Northern Redbelly Dace</u> *Construction* Potential impacts to the northern redbelly dace, if present, include the loss or alteration of habitat and increased sedimentation. In addition, direct impacts may include individual mortalities from construction activities, ground compaction, and vehicle traffic within suitable habitat. BakkenLink has committed to not constructing aboveground facilities and staging areas within wetlands, riparian areas, or other waters of the U.S. Therefore, no permanent disturbance or impacts are anticipated for the northern redbelly dace. *Operation* Hazardous materials, chemicals, fuels, etc., would not be stored within 100 feet of wetlands or WUS. Other setbacks would include at least 50 feet for all equipment staging areas and 10 feet for temporary storage of spoil material. Therefore, impacts to the northern redbelly dace from potential fuel or other petroleum product spills are not anticipated.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Land Use		
	Construction No residential lands would be traversed. Likewise, no residential lands are adjacent to aboveground facilities. Furthermore, there are no schools, churches, parks, or any other sensitive land use areas within 500 feet of the Project ROW. Because the construction ROW can be used for crop production and grazing following construction, this loss would be a short-term impact. The Project route does not cross any formal public recreation lands, except for the Summit Campground near U.S. Highway 85. Construction activities would result in surface disturbance with the Summit Campground. No national parks, national landmarks, state or municipal parks, or wild and scenic rivers would be traversed by the Project route. The construction ROW would temporarily affect approximately 44 acres of national grassland managed by the USFS. Based on the Project plans, BMPs, and other conservation commitments, it is anticipated impacts to special land uses would be minor. Operation The land required for the operation of the Project is approximately 80 acres. This accounts for the permanent placement of pipeline facilities, such as interconnect facilities, valve sites, and receipt facilities.	Project impacts to land use would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Recreation		
	Construction Construction during the fall could affect hunting activities. The duration of recreational impacts in any one area would usually be short term, lasting several days to several weeks. Wintertime activities would not be affected. The Project would not transect any wildlife management areas (WMAs), private land open to sportsmen (PLOTs), national parks, state or municipal parks, or developed recreational facilities (except the Summit Campground, briefly). Scenic views would be temporarily affected during construction until revegetation blends the colors and textures of the ROW into the surrounding landscape. The recreational enjoyment of wildlife (such as hunting during big game hunting seasons) may be temporarily affected by construction activities, depending on season and location. However, this effect would be short term. Although the route would cross approximately 1,500 feet of IRA, impacts to the IRA would be avoided because the HDD construction method would be used to drill under it. Impacts to urban and dispersed recreation resources as a result of the construction work force are expected to be minimal due to the minor short-term population increase (200 workers) and the intensive nature of the construction schedule. Operation The incremental work force size during operations (after construction) for the Project is estimated to be less than 10 pipeline personnel, resulting in a negligible long-term increase to recreational users in the region.	Project impacts to recreation resources would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Wilderness		
	Construction Construction of the Project would not impact the characteristics of wilderness areas or lands suitable for wilderness west of the Project as none of the activity would occur within either of the respective boundaries (Theodore Roosevelt National Park and Potential Lands with Wilderness Characteristics). Congress' management guidelines for these lands suitable for wilderness areas would not be violated. Construction-related impacts, which would occur outside of the boundaries, would be temporary, and the disturbed areas would be reclaimed and revegetated in accordance with applicable regulations and permit requirements. Operation Operation of the Project would not impair characteristics of the wilderness area or lands suitable for wilderness west of the Project area. Vehicular traffic along the permanent ROW would be limited to workers performing periodic pipeline and valve maintenance and emergency repairs to the pipeline or corrosion protection devices. The aboveground facilities would be located within the permanent ROW. These facilities would not impair lands suitable for preservation as wilderness.	Project impacts to wilderness resources would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Visual Resources		
	Construction Surface disturbances would affect scenery by creating exposed soil across the construction area with a different texture and color and by creating land barren of vegetation and topsoil. A visually strong edge of vegetation would appear along the construction ROW. The construction ROW would visually divide the landscape due to absence of vegetation and the altered lines of topography. Operation The Project likely would create a weak to moderate visual impact in SIO high, medium, low, and very low categories of rangeland and riparian landscapes and a weak visual impact in cultivated cropland landscapes. This impact would be more apparent in visually sensitive areas such as the Theodore Roosevelt NP viewshed, Little Missouri River corridor, and Lake Sakakawea viewshed. As reclamation progresses, moderate impacts for changes in colors of vegetation eventually would become weak. These weak impacts would meet the objectives for SIO high, medium, low, and very low landscapes. The Project's overall effects on visual conditions during hours of both daylight and darkness would be low. Some nighttime lighting would be required for operational safety and security at the receipt facilities. However, because of other minimal manmade sources of light in these remote areas, when viewed from nearby offsite locations, the overall change in ambient lighting conditions at the Project site may be moderate to substantial.	Project impacts to visual resources would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Noise		
	Construction No sensitive noise receptors (e.g., residences) are known to occur within 500 feet of the receipt facilities. Noise resulting from construction activities would be short term (2 to 3 weeks in any given area) in duration and limited to daylight hours. Based on construction noise analyses conducted for other pipeline projects (USEPA 1974), noise levels of 60 dBA or above could extend perpendicularly up to 12,000 feet (2.5 miles). These levels could occur sporadically over the construction period, and the zone of impact would be limited to the local area of construction activities as construction activities progress along the construction ROW. Operation Operation-related noise would be limited to the six receipt facilities where tanker trucks would be periodically unloading crude oil at storage tanks and support vehicles and equipment would be used by maintenance personnel. Residences are located more than 500 feet from the receipt facilities; therefore, impacts to these residences are not anticipated as a result of operational activities.	Project impacts related to noise would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Socioeconomics		
Population and Communities	Construction The Project construction spreads would require an average of 100 workers per spread to construct the Project, with approximately 200 workers total, working simultaneously. Work force availability in Williston and Dickinson may contribute to the percentage of local workers. Unemployment rates near or under 2 percent in the affected counties are indicative of the extremely tight local labor market; however, BakkenLink would attempt to hire 25 percent of its construction work force from local labor. Local employment opportunities initiated by the Project construction would be considered beneficial to the local area economies. As a result of the short duration of construction, it is assumed that only a small percentage of the non-local work force would bring their families. Adverse social, economic, and community infrastructure impacts of construction personnel are considered minimal because of the quick pace and short duration of the construction schedule. The number of workers would be very small relative to the regional population. Assuming half of the work force lodges in the Williston area and the other half in the Dickinson area, the largest population increase that could occur would be no greater than 0.7 percent in the Williston area and 0.6 percent in the Dickinson area. Operation Adverse social, economic, and community infrastructure impacts from operation personnel would be considered minimal as a result of the small permanent work force.	Project impacts related to socioeconomics would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Community Services and Temporary Housing	Construction Because construction would be short in duration, housing demand would be temporary. Based on typical pipeline construction, it is assumed that housing for the non-local pipeline work force would be divided among rental units, hotels/motels, recreational vehicles, and other accommodations; however, the current western North Dakota boom in oil and gas development has stretched existing housing resources in the Project vicinity. The lack of local availability for housing may require lengthy commutes to the Project area. BakkenLink anticipates that workers would be able to find accommodations at existing man camps as workers depart and beds becomes available.	
	A potential effect of the construction work force on housing would be competition with travelers, recreationists, and more notably, industry workers for temporary accommodations. Impacts to government services would be added incrementally by the Project, but due to the short pipeline construction schedule, these impacts would be temporary and would end once construction is completed. As a result of the short-term and transient nature of pipeline construction, many workers do not bring along school aged children, therefore, schools are not anticipated to be impacted by significant new enrollment. Operation The Project permanent work force would be small and would place a negligible demand on local services such as police, medical facilities, fire or educational services; and would not cause any significant detrimental effects to community social well-being.	

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Tax Revenues and Finance	Construction The estimated labor cost for construction in 2011 dollars is $21.3 million. This cost would be spread over the construction period and includes salaries for contract supervisors' wages, benefits and overtime for skilled and unskilled labor, and rental on labor force trade equipment. A portion of this total labor cost would be spent in the area and would result in increased sales tax receipts. Local spending is estimated to total $5.3 million during construction, or approximately 25 percent of total labor costs. Increased spending in the local areas would result in increased retail sales to merchants, as well as increased sales tax to local taxing jurisdictions. The overall impact of this local spending and tax generation would be positive. Operation The permanent work force for operation would be a slight increase of the current population full time positions, probably stationed at Dickinson and Williston. Maintenance would be done with local contractors specializing in this type of work. Each county and school district would benefit from the increased tax base and additional revenues. The largest increases in the tax base attributed to the Project would occur in McKenzie and Williams counties.	
Environmental Justice		
	Construction Because the Project is not located in large communities or urban areas, there is no evidence the Project would have a disproportionately high adverse human health or environmental effect on minority and low-income populations. Therefore, it is anticipated no environmental justice issues concerning minority and/or low-income populations are expected to occur as a result of the Project. Operation Impacts to minority and/or low-income populations would not occur as a result of Project operation.	Project impacts related to environmental justice would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Transportation		
	Construction Construction of the Project would generate short-term traffic increases from truck transport of pipe and construction materials, and from commuting by construction workers. Effects on traffic flows would be minor and short term, although the increase in heavy trucks could create some queuing delays on road segments where passing is restricted. Effects of traffic increases on county roads would be minor. Project-related effects on traffic accidents would be expected to be minor. Operation Operation of the Project would have a positive measurable effect on transportation in the Project vicinity. Long-term traffic would decrease by approximately 300 daily truck trips as a result of crude oil transportation occurring by pipeline instead of tanker truck. Localized truck traffic in the vicinity of the six receipt facilities would increase relative to existing levels.	Project impacts to transportation resources would not occur.
Public Safety		
	Construction Construction of the Project would generate the possibility of elevated risks to public safety through increased traffic, local population, and hazardous chemical and fire related risks. Traffic along the Project route would temporarily increase during construction; however, this increase is expected to be negligible when considered in the scope of the increased traffic as a result of recent oil and gas development. Operation A spill of crude oil during Project operation as a result of a pipeline leak could contaminate soil and groundwater if the leak is not properly contained and remediated. The pipeline would be monitored by an electronic system that would sense pressure and flow rates 24 hours a day, as well as by aerial patrols. Consistent monitoring would allow concerns to be immediately identified and addressed. A Pipeline Integrity Management (PIM) Plan would be developed, which, in conjunction with the ERP, would outline pipeline integrity management procedures to be implemented during operation.	Project impacts related to public safety would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
Hazardous Materials and Solid Waste		
	Construction *Hazardous Materials* Soil and water contamination along the ROW may result from spills during construction and trench excavation. Impacts from spills would typically be minor because of the low frequency of spill occurrence and relatively low volume of materials being handled, and potentially spilled. The Project SPCC Plan would address procedures to ensure the proper handling and storage of these materials and procedures for the containment and cleanup of spills at aboveground facilities. *Solid Waste* BakkenLink would dispose of construction waste in accordance with applicable rules. Construction debris would not be placed in or adjacent to waterways and construction trash would be removed from the ROW. BakkenLink would comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. *Contaminated Sites* It is possible that contaminated soil and groundwater (e.g., hydrocarbon contamination) could be encountered during trench excavation operations. In case contaminated soil is encountered, BakkenLink would suspend work in the area of the suspected contamination until the type and extent of the contamination was determined. Operation *Hazardous Materials* The pipeline and aboveground facilities associated with the Project must be designed, constructed, operated, and maintained in accordance with the USDOT Minimum Federal Safety Standards in 49 CFR Part 195. The regulations are intended to ensure adequate protection for the public and to prevent pipeline and facility accidents and failures. Part 195 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion. BakkenLink would design, construct, and operate the pipeline in accordance with federal regulations.	Project impacts related hazardous materials and solid waste would not occur.

Table 2-9 Proposed Action and No Action Alternative Comparison

Resources	Proposed Action	No Action Alternative
	Solid Waste The waste generated during operations would be similar to waste generated during construction, except for certain waste that may be generated from pipeline maintenance operations. Such waste materials may be considered hazardous and would be accumulated, stored, and disposed of in accordance with applicable rules and regulations.	
Cultural Resources/Native American Concerns		
	Construction *Cultural Resources* The Proposed Action would result in the loss of cultural resources that are not eligible for the NRHP. Although these sites would be recorded to BLM and SHPO standards and the information integrated into local and statewide databases, the sites ultimately would be destroyed by Project construction. Historic properties identified within the Project APE would be avoided, or if avoidance is not feasible, mitigated in accordance with a BLM and SHPO-approved treatment plan. Although historic properties sites would be mitigated through implementation of data recovery or other forms of mitigation, some of the cultural values associated with these sites cannot be fully mitigated; therefore, it is anticipated that impacts to these resources would occur. *Native American Concerns* Potential direct, indirect, and visual impacts to properties of Native American concern are similar to those that may affect cultural resources. Tribal consultations are ongoing, and would afford Native American groups the opportunity to review all cultural resources inventory documentation for the Project, and to express concerns about potential impacts to properties of traditional religious and cultural importance to such groups. If any issues are raised by Native American groups prior to construction, the issue would be addressed through further consultation with the BLM. Operation *Cultural Resources* Impacts to cultural resources are not anticipated as a result of Project operation. *Native American Concerns* Impacts to properties of traditional, religious, and cultural importance to the tribes are not anticipated as a result of Project operation.	Project impacts to cultural resources and properties of traditional, religious, and cultural importance to the tribes would not occur.