AGRICULTURAL IMPACT STATEMENT

Wisconsin Gas West Central Lateral Pipeline Project

Published February 28, 2014

Wisconsin Department of Agriculture, Trade and Consumer Protection

DATCP #3899

Agricultural Impact Statement

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EXECUTIVE SUMMARY

The Wisconsin Department of Agricultural, Trade and Consumer Protection (DATCP) has prepared this Agricultural Impact Statement (AIS) for the West Central Wisconsin Lateral Pipeline project. The AIS is an informational and advisory document, which analyzes the potential effects of the project on farm operations and agricultural resources. DATCP neither supports nor opposes the proposed pipeline, but has prepared this report to assess the potential impacts of the proposed pipeline on farmland and farm operations. The Agricultural Mitigation Agreement and Best Management Practices included in this document are designed to minimize many of these potential impacts.

Proposed Project

Wisconsin Gas LLC (WG) is proposing to construct new natural gas distribution facilities. These facilities would start from a proposed interconnection with the Viking Gas transmission Company pipeline in Eau Claire or Clark County and run south, including delivery points to WG's existing distribution networks in Augusta, Hixton, Alma, Black River Falls and Tomah. WG is also proposing to provide new natural gas service to several communities that have expressed an interest in obtaining natural gas service located in the counties of Clark, Eau Claire, Jackson and Monroe, which will be made possible by the West Central Lateral.

This project requires approval from the Wisconsin Public Service Commission (PSC) before construction can begin. If approved, it is expected to be constructed starting in early 2015 and placed in service by November 1, 2015.

WG is proposing to construct a 16-inch diameter pipeline from one of two locations on the existing Viking Gas pipeline near the Eau Claire/Clark County line, to Black River Falls. From Black River Falls to Tomah, WG would construct a 12-inch diameter pipeline. Additional smaller diameter pipes are proposed to provide service to local communities. Two potential routes, Route A and Route B, are being proposed for the project. The corridor for the 16-inch pipe would be 40 miles long for Route A or 45 miles long for Route B. The corridor for the 12-inch pipe would be 33.1 miles long for Route A or 29.3 miles long for Route B. The remaining smaller diameter pipes would total 13.3 additional miles for Route A or 14.9 miles for Route B.

Route A is just over 86 miles in total length and crosses an estimated 312 acres of farmland, while Route B is just over 89 miles in total length and crosses an estimated 303 acres of farmland. Both routes would affect land in Eau Claire, Clark, Jackson, and Monroe Counties. In agricultural areas, the width of the construction corridor for the 16-inch and 12-inch pipes would include at least 50 feet of temporary easement and 50 feet of permanent easement. In non-agricultural areas, the temporary easement would be 25 feet wide and the permanent easement would be 50 feet wide. The temporary easement is wider in agricultural

areas to accommodate the segregation of soil layers so that they can be replaced sequentially after the pipeline has been installed.

Project Need
WG has indicated that the project is needed for the following reasons.

- WG's existing facilities do not have enough capacity to meet the expected increase in demand from current customers;
- Northern Natural Gas, which currently is WG's only supplier in the west central Wisconsin region does not have enough capacity to increase the amount of natural gas it sells to WG;
- Additional demand for natural gas is expected in the west central Wisconsin region from communities that currently do not have a natural gas provider and from the growing frac sand processing industry.

Potential Agricultural Impacts from the Pipeline Project
Pipeline construction can have a number of effects on farmland owners, which include:

- Impacts on crop production
- Topsoil and subsoil mixing
- Subsoil and glacial material mixing
- Soil compaction
- Impacts on drainage
- Erosion in the construction and restoration right-of-way
- Impacts to irrigation systems
- Impacts on residences and farm buildings
- Effects on property values
- Impacts on future farm expansion
- Increased rock content on soil surface
- Impacts on organic and specialty farms
- Bio-security concerns

Mitigation Actions
The proposed West Central Wisconsin Gas Lateral Pipeline project will have considerable effect on farmland owners and agricultural resources. Many of these potential effects could be mitigated through certain actions taken by WG, including those identified in the agricultural mitigation plan and the best management practices identified in this report. The goal of the plan and best management practices is to restore the affected agricultural land to its pre-construction productivity as quickly as possible. The agricultural mitigation plan and the best management practices are located in the appendix of this report.

Farmland owners are not bound by any of the conditions included in the mitigation plan or the best management practices. Moreover, the success of this plan and these practices will only help if they are implemented during construction and restoration.

AGRICULTURAL IMPACT STATEMENT

West Central Lateral Natural Gas Pipeline
Clark, Eau Claire, Jackson, and Monroe Counties
Wisconsin Gas LLC
PSC Docket # 6650-CG-233

I. INTRODUCTION

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) has prepared this agricultural impact statement (AIS) in accordance with §32.035, Wisconsin Statutes. The AIS is an informational and advisory document that describes and analyzes the potential effects of the project on farm operations and agricultural resources, but cannot stop a project. The DATCP is required to prepare an AIS when the actual or potential exercise of eminent domain powers involves an acquisition of interest in more than 5 acres of land from any farm operation. The AIS reflects the general objectives of the DATCP in its recognition of the importance of conserving important agricultural resources and maintaining a healthy rural economy.

Wisconsin Gas LLC has developed an Agricultural Mitigation Plan (AMP). The AMP is intended to avoid or mitigate the potentially adverse impacts on agricultural productivity from pipeline construction. The AMP is included in the Appendix of this report.

Sources of information used to prepare this statement include the Wisconsin 2012 Agricultural Statistics and other yearly issues; the 2007 Census of Agriculture; the Soil Surveys of Eau Claire, Clark, Jackson, and Monroe Counties; Wisconsin Gas LLC: the Application by Wisconsin Gas LLC to Construct a Natural Gas Pipeline Lateral; the Wisconsin Public Service Commission; and owners and operators of the affected farmland.

II. PROJECT DESCRIPTION

Wisconsin Gas LLC (WG) is proposing to construct new natural gas distribution facilities, including pipelines, in western Wisconsin. The main pipeline for this project would connect to Viking Gas Transmission Company's pipeline in either Eau Claire County or Clark County. It would then head south to connect to Wisconsin Gas' existing distribution networks in Augusta, Hixton, Alma, Black River Falls, and Tomah. WG is also requesting authority to provide new natural gas service to additional communities in Eau Claire, Clark, Jackson, and Monroe counties. Refer to the Project Location Map on the next page. WG is proposing two alternative routes for the pipeline, Route A and Route B. The total length of each route is approximately 86 miles for Route A and 89 miles for Route B.

The proposed project requires a Certificate of Authority (CA) from the Public Service Commission of Wisconsin (PSCW) before construction can begin. The Commissioners will decide whether to approve, modify, or deny the applicant's proposal.

PSC REF#:182679

If approved by the PSCW, construction of the project is expected to start in the beginning of 2015 and continue through October of 2015. WG plans to place the proposed facilities in service on November 1, 2015.

Proposed facilities include the following.

- 16-inch diameter steel pipe extending from the Viking Town Border Station to the downstream district regulator station at Black River Falls for roughly 40 miles for Route A or 45 miles for Route B.
- 12-inch diameter steel pipe from the proposed Black River Falls district regulator station to the proposed Tomah district regulator station, which would be 33.1 miles for Route A or 29.3 miles for Route B
- Smaller diameter pipes extending to the proposed Augusta, Hixton, and Warrens district regulator stations. The proposed Augusta branch consists of 7 miles of 6-inch steel pipe for Route A or 9.8 miles of 6-inch steel pipe for Route B. The proposed Hixton branch consists of 3 miles of 4-inch steel pipe for Route A or 2.1 miles of 4-inch steel pipe for Route B. The proposed Warrens branch consists of 0.9 of a mile of 4-inch steel pipe for either Route A or Route B.

WG is also proposing to improve existing facilities. These proposals include the following.

- At Augusta, extend the 8-inch plastic pipe 1.9 miles from the proposed Augusta distribution district regulator station to the existing Augusta distribution system.
- At Alma, extend the existing 6-inch steel pipe 0.3 of a mile from the proposed Alma district regulator station for Route A to the existing Alma distribution system.
- Extend the 8-inch plastic pipe 1.9 miles from the proposed Black River Falls district regulator station to the existing Black River Falls distribution system.
- Extend the 12-inch steel pipe 0.2 of a mile from the proposed Tomah district regulator station to the existing Tomah distribution system.

Additional information about the proposed project can be obtained from WG's website for the project; http://www.we-energies.com/home/projects/ngaslateralinfo.htm. You can also find the original and amended Application for a Certificate of Public Convenience and Necessity on the PSCW's website at http://psc.wi.gov in the electronic records filing section under docket number 6650-CG-233.

WG has divided the proposed project routes into fifteen segments to facilitate discussion of the project. The following table identifies these segments.

Table 1
Segment Numbering

Segment Number	Description	Route A Segment Name	Route B Segment Name
1	16"-475 psig Lateral (Includes Augusta 6" Branch) - Viking TBS to Fairchild	A.1	B.1
2	16"-475 psig Lateral - Fairchild to Town House Rd, Alma	A.2	B.2
3	16"-475 psig Lateral - Town House Rd, Alma to Avon Rd, Alma	A.3	B.3
4	16"-475 psig Lateral - Avon Rd, Alma to Prindle Rd & Arnold Rd, Alma	A.4	B.4
5	16"-475 psig Lateral - Prindle Rd & Arnold Rd, Alma to Odeen Rd, Adams	A.5	B.5
6	16"-475psig Lateral - Odeen Rd, Adams to Black River Falls DR	A.6	B.6
7	12"-475 psig Lateral - Black River Falls DR to Millston	A.7	B.7
8	12"-475 psig Lateral - Millston to Warrens Branch	A.8	B.8
9	12"-475 psig Lateral - Warrens Branch to Tomah DR	A.9	B.9
10	Augusta 8"-60 psig Distribution	A.10	B.10
11	Hixton 4"-475 psig Branch A.	A.11	B.11
12	Alma 6"-275 psig Distribution (Route A Only)	A.12	--
13	Black River Falls 8"-60 psig Distribution	A.13	B.13
14	Tomah 12"-60 psig Distribution	A.14	B.14
15	Warrens 4"-475 psig Branch	A.15	B.15

psig = pounds per square inch gauge
TBS = Town Boarder Station
DR = district regulator station

For the 16-inch and 12-inch pipelines, WG is proposing to acquire permanent easement that is 50 feet wide. In agricultural areas, an additional 50 feet of temporary easement will be acquired for a total construction width of 100 feet. In other areas such as wetland, woodland, and developed areas, the temporary easement will be 25 feet in width for a total construction width of 75 feet. In general, the 16-inch and 12-inch main pipelines are proposed to be within easements on private property. This will reduce the risk of conflict with other utilities or road improvement projects in the future. There are short distances where the main is proposed to be within the road right-of-way to avoid above ground structures that are close to

the road right-of-way. In these cases, no permanent easement from private landowners is needed.

A portion of the 6-inch main to Augusta is proposed to be within road right-of-way, where the adjacent land is forested, to avoid clearing a 50-foot swath of trees. This is mainly along County Highway M from County Highway H to just east of Kempton Road. The 6-inch main then transitions into a 50-foot easement on private property as the land use becomes mostly agricultural. A temporary easement is not required for installation of the 6-inch main. The 4-inch branches to Hixton and Warrens are proposed to lie within road right-of-way. The distribution main downstream of the district regulator stations is proposed to be installed within road right-of-way or on existing WG owned land (as is the case for the Tomah distribution).

Associated Facilities

The proposed project requires the installation of one Town Border Station (TBS) that will connect the proposed Lateral to the Viking pipeline. For Route A, the TBS will be located at the intersection of the Viking pipeline and County Highway H in the town of Wilson in Eau Claire County. It will be approximately 4,200 feet north of the intersection of County Highway H and Forest #2 Road on the west side of County Highway H. For Route B, the TBS will be located at the intersection of the Viking pipeline and Dickerson Avenue in the town of Foster in Clark County. It will be approximately 2,200 feet north of the intersection of Dickerson Avenue and Hinker Road on the east side of Dickerson Avenue.

Viking Gas plans to purchase up to 20 acres of land in fee-simple[1] for Viking Gas' facilities and for WG's facilities. Of those 20 acres, only 1 acre will be used for WG's facilities. Up to 1 acre may be used for Viking Gas' tap and metering facilities. WG's site will include station pipe and valves including a remote shut-off valve (RSV), odorization equipment, regulation, heater, filter, and a 16-inch pig launcher. The 20-acre parcel will have a width of approximately 1,016 feet and a depth of approximately 857 feet. This parcel is proposed to be orientated such that the 857-foot side is parallel to either the County Highway H right-of-way in the town of Wilson for Route A or the Dickerson Avenue right-of-way in the town of Foster for Route B.

[1]A fee-simple acquisition means that the buyer purchases exclusive rights to the property. This is in contrast to an easement where a buyer purchases partial rights to property.

There are two proposed options for accessing the proposed Viking TBS for Route A. One option is via a proposed access driveway that follows an existing cleared pathway approximately 100 feet north of the Viking pipeline and the County Highway H intersection. It would extend to the southwest for approximately 300 feet until it enters the station facility. Another option for access to the station site is via a proposed access driveway that follows the proposed 16-inch outlet pipe easement. This is approximately 250 feet south of the Viking pipeline and County Highway H intersection. It would extend west from County Highway H approximately 200 feet until it enters the station facility. The proposed Viking TBS for Route B will be accessed via the adjacent roadway, Dickerson Avenue.

The proposed access driveways for the TBSs will have a typical width of 30 feet to accommodate standard utility vehicles and larger odorant delivery trucks. The proposed DRs and valve assembly sites will be accessed via the adjacent roadways with a 15-foot wide access driveway to accommodate standard utility vehicles. All access driveways will be constructed in accordance with the applicable permits and will maintain current drainage patterns.

A total of five downstream distribution district regulator stations (DR) are proposed to regulate from 475 pounds per square inch gauge (psig) to either 275 psig or 60 psig to supply the existing downstream distribution systems. In addition, information for two future DRs that would serve the areas of Fairchild and Warrens is included in WG's application to the PSCW for authority to construct a lateral. The locations for the Augusta DR, Fairchild DR, Hixton DR, Black River Falls DR, Warrens DR, and Tomah DR are the same for Route A and for Route B. The location for the Alma DR varies depending on the route. WG does not intend to purchase land for the DRs. They are to be located within road right-of-way, on easements on private property, or on existing WG-owned land. Table 2 below describes the site locations for each route as well as the facilities to be installed at each site. All sites will have pressure regulation and associated pipes and valves. The Black River Falls DR will include a 16-inch pig receiver and a 12-inch pig launcher. The Tomah DR will include a 12-inch pig receiver.

Table 2
Associated Facilities

Facility Name	Route A Location	Route B Location	Facility Description
Viking Town Border Station (TBS)	Southwest corner of Viking pipeline and County Hwy H in the town of Wilson	Southeast corner of the Viking pipeline and Dickerson Ave in the Town of Foster	Measurement, odorization, regulation (pipeline pressure to 475

Facility Name	Route A Location	Route B Location	Facility Description
	(approximately 4,200 ft. north of Forest #2 Rd). The site will be approximately 200 ft. to the west of the County Hwy H ROW	(approximately 2,200 ft. north of Hinker Rd). The site will be directly adjacent to the Dickerson Ave ROW	psig), heater, filter, and 16-inch pig launcher
Augusta District Regulator Station (DR)	On the south side of Hwy 12 and approximately 500 ft. east of County Highway M in the town of Bridge Creek	Same as Route A.	Regulation (475psig to 60 psig), heater, and filter
Future Fairchild District Regulator Station (DR)	On the south side of E Main St and approximately 2,400 ft. east of N Camp Rd in the town of Fairchild	Same as Route A	Regulation (475 psig to 60 psig), heater, and filter
Hixton District Regulator Station (DR)	Northwest corner of County Hwy FF & S Alma Rd in the town of Hixton	Same as Route A	Regulation (475 psig to 60 psig), heater, and filter
Alma District Regulator Station (DR)	Southeast corner of Prindle Rd and Arnold Rd in the town of Alma	Northeast corner of Hwy 12 and Garage Rd in the town of Alma	Regulation (475 psig to 275 psig), heater, and filter
Black River Falls District Regulator Station (DR)	Northwest corner of the Union Pacific railroad and Hwy 54 in the town of Brockway (about 500 ft. northeast of Vaudreuil Rd and Hwy 54)	Same as Route A	Regulation (475 psig to 60 psig), heater, filter, 16-inch pig receiver and 12-inch pig launcher
Future Warrens District Regulator Station (DR)	On the north side of County Hwy EW and about 1,400 ft. east of Arctic Rd in the town	Same as Route A	Regulation (475 psig to 60 psig), heater, and filter

Facility Name	Route A Location	Route B Location	Facility Description
	of Lincoln		
Tomah District Regulator Station (DR)	WG's existing Tomah Propane Air property at 1200 W Veterans St in the city of Tomah	Same as Route A	Regulation (475 psig to 60 psig), heater, filter, and 12-inch pig receiver.
16-inch Valve Assembly	Various locations along Segments 1-6 with a maximum spacing of 8 miles, exact locations to be identified once a final route is chosen by the PSC		16-inch valve isolation and blow-down facilities
12-inch Valve Assembly	Various locations along Segments 7-9 with a maximum spacing of 8 miles, exact locations to be identified once a final route is chosen by the PSC		12-inch valve isolation and blow-down facilities.

Facilities 3, 4, 5, 6 and 8 each encompass approximately a 10,000 square foot area during construction. Facilities 7 will encompass approximately a 22,500 square foot area during construction. Facility 9 will cover approximately a 40,000 square foot area during construction. DR permanent impacts will include the building (240 square feet in size), a gravel pad and an access road. The remainder of the 10,000 square foot area at the DRs may not be impacted entirely, and will be limited to temporary impacts related to construction.

The proposed Viking TBS facilities will each encompass an area approximately 160,000 square feet and consist of a building, gravel pad, and several above grade appurtenances.

All facility locations are adjacent to roads within the corridor boundaries and consist of upland agricultural, old field, and forested lands. Descriptions are listed below:

Table 3
Parcel Descriptions for Associated Facilities

Facility Number	Facilities Description	Size in Acres	Land Cover Type
1	Viking TBS - Route A	3.6731	Hardwood Forest
2	Viking TBS - Route B	3.6731	Hardwood Forest
3	Augusta District Regulator (DR) Station The Alternate Augusta DR is 650 feet west of the original site	0.2296	Corn

Facility Number	Facilities Description	Size in Acres	Land Cover Type
4	Future Fairchild District Regulator (DR) Station	0.2296	Corn
5	Alma District Regulator (DR) Station	0.2296	Soybeans
6	Hixton District Regulator (DR) Station	0.2296	Old Field
7	Black River Falls District Regulator (DR) Station	0.5165	Developed
8	Future Warrens District Regulator (DR) Station	0.2296	Pine Plantation
9	Tomah District Regulator (DR) Station	0.9183	Old Field

Associated facilities are anticipated to be constructed within the same timeframe as the pipe installation.

Valve assemblies will also be located as part of the design, however all valve assembly locations will be directly over the proposed pipe alignments. Therefore, valve assemblies will not impact any additional resources. The 475 psig lateral will include various mainline valve assemblies at locations other than the above-listed TBS and DR sites. The valve assemblies will be spaced a maximum of 8 miles apart. Each 16-inch and 12-inch valve assembly will typically include a below ground valve with an above ground operator and blow-downs on both sides of the valve for emergency and operational purposes. The 16-inch and 12-inch valve assemblies will be designed to accommodate (remote shut-off valves) RSVs. Once the actual route is chosen by the PSCW, the locations for the valve assemblies will be identified by WG and agreed upon by WG and the PSCW.

Equipment Staging Areas

There are six proposed equipment staging areas (laydown yards) that have been identified. They are located at varying sites along the project corridor. The sites are numbered 1 through 7 as they occur north to south. The site previously identified as Staging Area 5 has been removed from consideration. According to WG, a majority of these areas are pre-existing, barren lands that are predominantly open-pit mining operations. WG chose these sites because they are located where minimal environmental impacts will occur.

Staging Area 1:
This site is located along segment A.1 north of the village of Fairchild, and southeast of the intersection of County Highway H and Black Creek Road. This area is barren land that was a small, open pit sand mine.

Staging Area 2:
This site is immediately southeast of the village of Humbird, adjacent to and east of Highway 12/27. This property is currently a gravel staging/parking area for a large Christmas tree farm.

Staging Area 3:
This site is located east of the project corridor, between the villages of Humbird and Merrillan, south east of the intersection of Highway 12 and Cherry Road. A frac-sand distribution and railroad spur border the north side of the staging area while the area itself is currently cropped agricultural land.

Staging Area 4:
This site is off the project corridor, north of the city of Black River Falls at the intersection of Leicht, Paul Road and West Mission Road. This staging area is in two portions of an existing open pit mine.

Staging Area 6:
This site is directly north of the city of Black River Falls at the southeast corner of the Highway 12 and Riverview Drive intersection. This property was once a small-scale industrial facility that has been abandoned and torn down leaving a large concrete footprint.

Staging Area 7:
This site is east of the city of Black River Falls and off the project corridor. It lies between Airport Road and Timber Road. It is within a small commercial subdivision on undeveloped grassland with small jack-pine wooded portions.

Existing Facilities

WG's existing natural gas system serves business and residential customers. It provides year-round service, but demand for gas is generally greatest in the colder months. In order to move natural gas from the sources to its network, WG buys transportation capacity on other pipeline networks. Currently, WG purchases pipeline capacity from Northern Natural Gas in order to provide service to its customers in western Wisconsin. WG must also maintain a

reserve margin[2] so that it can continue to supply customers during unexpected conditions. WG has indicated that on a system wide basis, it typically maintains a reserve margin at or around 5 percent of peak day demand to cover unanticipated growth, forecast error, unexpected conditions, or system upsets. If the reserve margin is negative when peak demand occurs, gas service to customers can be degraded to the point where transportation service is subject to curtailment.[3]

WG is a subsidiary of Wisconsin Energy Corporation of Milwaukee. It provides natural gas to over one million residential, commercial, and industrial customers. It operates about 10,300 miles of gas mains.

Project Purpose and Need

WG has indicated that within the next few years, it will face a shortage of natural gas transportation capacity to fulfill the sales demand requirements of its service areas in west central Wisconsin. After investigating alternatives to meet this projected capacity shortfall, WG has determined that the proposed West Central Lateral is the best solution to enable it to maintain the capacity required to meet sales requirements in this area.

WG obtains gas for its western Wisconsin service area from the Northern Natural Gas (NNG) facilities at Black River Falls and Tomah. All of NNG's pipeline capacity at these facilities is currently subscribed (under contract to WG and other companies). Therefore, reliability of WG's service could become a growing problem if additional sources of natural gas are not accessed. These constrains also limit WG's ability to offer natural gas service to communities adjacent to its existing service area.

One area of increased demand for natural gas comes from frac sand processors. Natural gas is used in drying this sand so that it can be shipped and used in hydraulic fracturing. Western Wisconsin has been identified as a region with the quality and quantity of frac sand that will support the expansion of frac sand mining and processing.

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[2]The term "Reserve Margin" is used to quantify the difference by which Contracted Capacity exceeds forecasted Peak Day demand.

[3]It is important to note that this is a physical limitation. Gas at any price (penalty gas or over-takes) is not available from NNG. Therefore, curtailment would be the only option once the peaking unit is exhausted

Alternatives to the Proposed Project

WG issued a request for proposals to address its need for increased pipeline capacity. Four bidders responded with proposals for a total of 21 alternatives. The bidders were Northern Natural Gas Company, Viking Gas Transmission Company, ANR Pipeline Company, and Wisconsin Gas LLC - Customer Operations.

WG has determined that it would be more cost effective to purchase the additional gas needed to meet increased demand from another supplier (Viking Gas) rather than expand NNG's facilities. WG indicated that on both economic and non-economic grounds the West Central Lateral proposed by Wisconsin Gas LLC – Customer Operations is the best choice to accomplish the following objectives:

- *Deliver Cost Savings to Customers*. Compared to the alternative of "stepped" expansions of the existing NNG system, the West Central Lateral is projected to deliver customers a net present value of gas cost savings of between $100 million and $200 million, depending on the precise route chosen and the discount rate used in the net present value calculation.
- *Ensure Reliability*. The construction of the West Central Lateral will enable WG to meet peak day needs associated with system sales requirements and ensure service reliability.
- *Address Demand Growth and Advance Economic Development*. The West Central Lateral will enable WG to meet forecasted commercial and industrial demand requirements for natural gas service (including rising demand from frac sand operations in the region).
- *Introduce Pipeline Competition*. The West Central Lateral will introduce a second service provider to the service area (besides NNG) to enhance reliability.
- *Expand Gas Service*. Make natural gas service available to nine towns and two villages that currently rely on more expensive propane.

Potential Routes

WG has submitted two potential route corridors for the West Central Lateral project (Route A and Route B) to the Public Service Commission of Wisconsin (PSCW). Each route is described below. In addition, WG has proposed alternative alignments for several short segments within each route. Refer to the map on page 14. These segments are not included in Tables 4 and 5 below.

Route A is 456,327 feet (86.43 miles) long, and crosses both upland and wetland areas. The upland areas include agricultural lands within existing and new right-of-way (311.87 acres), non-agricultural uplands on existing and new right-of-way (114.29 acres), upland forest on existing right-of-way (20.44 acres), and upland forest on new right-of-way (171.80 acres).

Table 4
Route A Length and Right-of-Way (ROW) Requirements

Segment	Segment Length (ft.)	Length in Public Road ROW (ft.)	Length in Landowner Easement (ft.)
1	115284	17,896,	97,388
2	48,805	871	47,934
3	21,143	167	20,976
4	21,506	515	20,991
5	30,422	261	30,161
6	10,866	1,384	9,482
7	81,020	3,414	77,606
8	41,118	7,882	33,236
9	52,052	3,207	48,845
10	537	468	69
11	15,991	14,665	1,326
12	1,761	1,729	32
13	10,120	10,120	0
14	959	33	926
15	4,743	4,743	0
Total	456,327	67,355	388,972

WG has proposed alternative alignments for short distances within many of the route segments. These alternate alignments are being proposed in response to the circumstances for each of the affected locations. Each alternative would be evaluated individually. If a given overall route is selected by the PSCW, then the commissioners would also determine which, if any, of the alternate alignments would be selected instead of the originally proposed alignments. The alternates and original segments for Route A are summarized in Table 5. They will be described in greater detail later in the report.

PSC REF#:190188

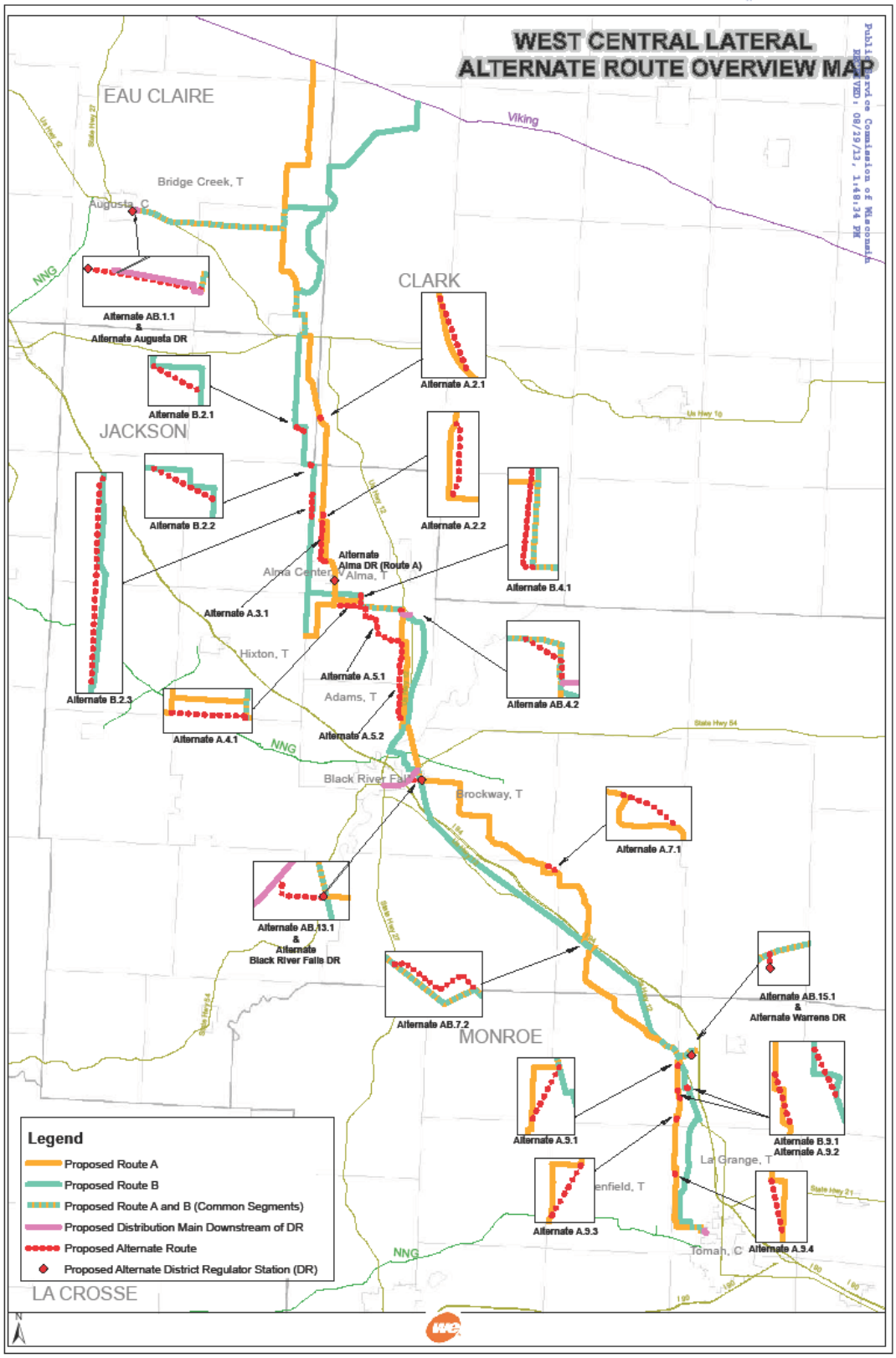


Table 5
Route A Alternate and Original Length and Right-of-Way (ROW)

Segment	Segment Length (ft.)	Length in Public Road ROW (ft.)	Length in Landowner Easement (ft.)
Alternate Augusta DR & Alternate AB.1.1	658	692	0
Original Augusta DR & Original AB.1.1	537	591	0
Alternate A.2.1	2,827	0	2827
Original A.2.1	2,887	2.902	0
Alternate A.2.2	2,325	150	2,175
Original A.2.2	2,370	884	1,486
Alternate A.3.1	11,143	9,901	1,242
Original A.3.1	11,100	40	11,60
Alternate AB.2-3	2,512	0	2,512
Alternate A.4.1 & AB 4.1	8,145	6,103	2,042
Original A.4.1 & AB 4.1	9,292	154	9,138
Alternate AB.4.2	1,903	464	1,439
Original AB.4.2	2,238	1,461	777
Alternate Alma DR & Alternate A.5.1	15,240	1,776	13,464
Original Alma DR & Original A.5.1	18,749	13,095	5,654
Alternate A.5.2	20,411	2,140	18,271
Original A.5.2	21,064	360	20,704
Alternate Black River Falls DR & Alternate AB.13.1	2,641	2,625	16
Original Black River Falls DR & Original AB.13.1	2,391	2,362	29
Alternate A.7.1	4,272	241	4,031
Original A.7.1	6,039	451	5,588
Alternate AB.7.2	511	41	470
Original AB.7.2	492	390	102
Alternate A.9.1	1,259	0	1,259
Original A.9.1	1,655	0	1,655
Alternate A.9.2	2,797	0	2,797
Original A.9.2	3,358	0	3,358

Alternate A.9.3	1,106	0	1,106
Original A.9.3	1,525	0	1,525
Alternate A.9.4	2,658	12	2,646
Original A.9.4	3,253	12	3,241
Alternate Warrens DR & Alternate AB.15.1	60	5	55
Original Warrens DR & Original AB.15.1	1,154	1,103	51

Route B is 471,127 feet (89.23 miles) long, and crosses both upland and wetland areas. The upland communities include agriculture on existing and new right-of-way (303.18 acres), non-agricultural uplands on existing and new right-of-way (115.68 acres), upland forest on existing right-of-way (33.62 acres), and upland forest on new right-of-way (152.56 acres).

Table 6
Route B Length and Right-of-Way (ROW) Requirements

Segment	Segment Length (ft.)	Length in Public Road ROW (ft.)	Length in Landowner Easement (ft.)
1	138,286	17,483	120,803
2	52,380	1,228	51,152
3	24,627	1,219	23,408
4	21,549	475	21,074
5	34,286	855	33,431
6	17,957	4,993	12,964
7	64,719	2,552	62,167
8	37,586	1,027	36,559
9	52,441	3,306	49,135
10	537	468	69
11	10,937	10,829	108
13	10,120	10,120	0
14	959	33	926
15	4,743	4,743	0
Total	471,127	59,331	411,796

WG has also proposed alternative alignments for short distances within many of the route segments for Route B. These alternate alignments are being proposed in response to the circumstances for each of the affected locations. Each alternative would be evaluated

individually. If a given overall route is selected by the PSCW, then the commissioners would also determine which, if any, of the alternate alignments would be selected instead of the originally proposed alignments. The alternates and original segments are summarized in Table 7. They will be described in greater detail later in the report.

Table 7
Route B Alternate and Original Length and Right-of-Way (ROW) Requirements

Segment	Segment Length (ft.)	Length in Public Road ROW (ft.)	Length in Landowner Easement (ft.)
Alternate Augusta DR & Alternate AB.1.1	658	692	0
Original Augusta DR & Original AB.1.1	537	591	0
Alternate B.2.1	2,860	0	2,860
Original B.2.1	3,850	2,004	1,846
Alternate B.2.2	1,407	0	1,407
Original B.2.2	1,867	785	1,082
Alternate B.2.3	6,012	116	5,896
Original B.2.3	6,102	2,885	3,217
Alternate AB.2-3	2,512	0	2,512
Alternate B.4.1 & AB.4.1	3,092	85	3,007
Original B.4.1 & AB.4.1	3,020	957	2,063
Alternate AB.4.2	1,903	554	1,349
Original AB.4.2	2,238	1,485	753
Alternate Black River Falls DR & Alternate AB.13.1	2,641	2,625	16
Original Black River Falls DR & Original AB.13.1	2,391	2,362	29
Alternate AB.7.2	511	41	470
Original AB.7.2	492	390	102
Alternate B.9.1	2,621	0	2,621
Original B.9.1	3,607	0	3,607
Alternate Warrens DR & Alternative AB.15.1	60	5	55
Original Warrens DR & Original AB.15.1	1,154	1,103	51

According to the data that WG provided, agricultural lands comprise approximately 42 percent of Route A and 41 percent of Route B. This includes the required seven branch and distribution segments for each route. Property classified as being in agricultural use includes actively cultivated fields (including organic farms), pastures, hay fields, recently fallow fields (old field), cranberry farms, farmed (cropped) wetlands, deer farms, and Christmas tree farms. Fields or other areas with no evidence of recent tillage or agricultural production were not included as agricultural land.

The following is a description of each of the original segments in both routes as well as the alternate sections.

Route A.1 consists of a 16-inch steel main pipeline that starts at the proposed Viking TBS at the intersection of the Viking pipeline and County Highway H in the town of Wilson in Eau Claire County and runs south along County Highway H into the town of Fairchild in Eau Claire County to County Highway M where Route A merges with Route B and branches to the west with a 6-inch main. The 6-inch main runs west along County Highway M into the town of Bridge Creek in Eau Claire County and then west along US Highway 12 to approximately 500 feet east of the County Highway M and Highway 12 intersection where the proposed Augusta DR is to be located. This common portion of Segment 1 is approximately 7 miles long. From the common segment at the intersection of County Highway H and County Highway M, the 16-inch main continues south along County Highway H to North Camp Road and heads southeast along North Camp Road to Black Creek Forest Road. At this point, Route A merges with Route B again and continues south along North Camp Road to Pond Road. It then heads east along Pond Road for approximately 2,300 feet and then south on right-of-way that does not parallel any existing corridors for approximately 4,000 feet to East Main Street where the future Fairchild DR is to be located. It then continues east for a couple hundred feet and heads south along a tree line for about 1,100 feet to Highway 10. This common portion of Segment 1 is approximately 2.5 miles long.

Route B.1 consists of a 16-inch steel main that starts at the proposed Viking TBS at the intersection of the Viking pipeline and Dickerson Avenue in the town of Foster in Clark County. It runs south along Dickerson Avenue, continues west along a gravel drive approximately 350 feet south of Willard Road, and then follows the existing electrical corridor southwest to Camp Globe Road. It then follows Camp Globe Road southwest to Horse Creek Forest Road and follows Horse Creek Forest Road south until it turns into Forest #4 Road in the town of Fairchild in Eau Claire County. At the intersection of Forest #4 Road and Black Creek Forest Road the 16-inch main will branch to a 6-inch main that

heads west along Forest #4 Road. At the intersection of Forest #4 Road and County Highway H, Route B merges with Route A and the 6-inch main heads south along County Highway H until it intersects County Highway M, then follows County Highway M west to the town of Bridge Creek in Eau Claire County. It continues west along Highway 12 to approximately 500 feet east of the County Highway M and Highway 12 intersection where the proposed Augusta DR is to be located. This common portion of Segment 1 is approximately 8 miles long. The 16-inch pipe will continue south along Black Creek Forest Road until it intersects with North Camp Road. At this point, Route B merges with Route A again and continues south along North Camp Road to Pond Road. It then heads east along Pond Road for approximately 2,300 feet and then south along a new corridor for approximately 4,000 feet to East Main Street where the future Fairchild DR is to be located. It continues east a couple hundred feet and heads south along a tree line for about 1,100 feet to Highway 10. This common portion of Segment 1 is approximately 2.5 miles long.

The **Alternate Augusta DR** is proposed on private easement at the southwest corner of County Highway "M" and Baldwin Street. It is approximately 650 feet west of the original site. Relocation of this DR would eliminate the Original AB.10, but increase the length of the Original AB.1 by 650 feet. It would follow U.S. Highway 12 and Baldwin Street to just west of County Highway "M." The extension of AB.1 is referred to as **Alternate AB.1.1**. The Alternate Augusta DR is being proposed because it is located outside of the 100-year flood hazard area and it can be accessed via town or county roads instead of the busier U.S. Highway 12.

Route A.2 consists of a 16-inch steel main that starts at Highway 10 approximately 1,400 feet west of Fairview Road in the town of Fairchild in Eau Claire County. It runs east along Highway 10, then turns south and runs along Fairview Road into the town of Cleveland in Jackson County. It continues south along Fairview Road and along a new corridor until just north of Lange Road where it heads southeast along the railroad into the town of Mentor in Clark County. Just west of the intersection of the railroad and County Highway B, it turns south along a property line and continues along a new corridor into the town of Alma in Jackson County until it intersects South Alma Center Road. The main then follows South Alma Center Road south across the Halls Creek Fishery to Town House Road.

Alternate A.2.1 is located east of the original route and follows the tree line through agricultural land. The original route is located adjacent to the railroad right-of-way, which would require clearing trees. The alternate is being proposed because it avoids tree clearing, reduces wetland and stream impacts, reduces the number of "potentially sensitive buildings" close to the pipeline, and it is estimated to cost less and take less time to construct.

Alternate A.2.2 is located east of South Alma Center Road and generally follows a parcel line south across Halls Creek until it reaches County Highway "F" where it runs adjacent to the east road right-of-way. The original route is mainly located on easement just west of South Alma Center Road right-of-way. The alternate is being proposed because it avoids construction under or near the Halls Creak Bridge, so it would reduce conflicts if the bridge or road were ever expanded. It would also avoid a newly identified archeological site and it is estimated to cost less because horizontal directional drilling would not be needed as it would be for the original.

Route B.2 consists of a 16-inch steel main that starts at the same location as Route A.2 but heads west along Highway 10 for approximately 1,300 feet, then turns south into the town of Cleveland in Jackson County. It runs along a new corridor on a property line until it intersects North Alma Center Road. The main then follows North Alma Center Road south until it intersects County Highway B where it turns east and follows County Highway B for approximately 2,600 feet. It then heads south along a property line until it intersects Giloy Road at the town of Cleveland and town of Garden Valley boundary line in Jackson County. It then heads east for approximately 2,100 feet where it turns south and then east along the edge of a farm field to avoid a house and farm area. The main then heads south along the property line until it intersects Moore Road in the town of Alma in Jackson County. It continues south along South Moore Road, which turns into South Alma Center Road and follows South Alma Center Road for approximately 2,100 feet where it turns south and runs along a new corridor across the Halls Creek Fishery to Town House Road, approximately 2,600 feet west of the intersection of Town House Road and South Alma Center Road.

Alternate B.2.1 heads southeast of the original route just south of the intersection of South Alma Center Road and County Highway "B," and runs diagonally through mostly agricultural land. WG is proposing this alternate because it is estimated to cost less and take less time to construct than the original. It would also reduce the area of disturbance and be close to fewer "potentially sensitive buildings."

Alternate B.2.2 heads southeast of the original route at Giloy Road and runs diagonally through mainly agricultural land to the original route just south of the intersection of Giloy Road and Poertner Road. WG is proposing this alternate because it reduces the area of disturbance, reduces the number of "potentially sensitive buildings" that would be close to the pipeline centerline, and it would reduce the construction timeframe and cost for this portion of the route.

Alternate B.2.3 starts 800 feet north of South Moore Road and Fees Road, and crosses from the original route to the west side of South Moore Road to bend south following the road right-of-way and parcel lines until it intersects the original route just north of Town House Road. It is being proposed because it affects fewer residential landowners along the originally proposed route and it is estimated to slightly reduce construction cost.

Alternate AB.2-3 could connect Segment A.2 to B.3 or Segment B.2 to A.3. It is a 16-inch steel main that follows Town House Road and South Alma Center Road for 2,512 feet. The affected land is agricultural.

Route A.3 consists of a 16-inch steel main that starts at Town House Road and South Alma Center Road and runs south for approximately 300 feet where it turns east on a new corridor along a property line for approximately 1,300 feet. It then continues south along a property line to approximately 500 feet north of the village of Alma Center where it turns east to run along another property line for approximately 1,500 feet. It then follows a new corridor in a southeasterly direction for about 2,800 feet to cross a creek, the railroad, and Highway 95 and then follows another property line south to Old 95 Road where it continues south along Avon Road and along a property line to approximately 2,800 feet north of Prindle Road.

Alternate A.3.1 lies west of the original route and runs adjacent to the east right-of-way line of County Highway "F" through mainly agricultural land. The original route runs along a parcel line through agricultural land and forested wetland. WG has indicated that this alternate is being proposed because it avoids potential conflicts with the landowner's future development plans, avoids forested wetlands that would be affected by the original route, reduces the number of "potentially sensitive buildings" near the proposed pipeline, and is estimated cost less to construct.

Route B.3 consists of a 16-inch steel main that starts at Town House Road, approximately 2,600 feet west of the intersection of Town House Road and South Alma Center Road in the town of Alma, Jackson County. It continues on a new corridor south along a property line until it intersects Joos Road. It then follows Joos Road south into the village of Alma Center. Joos Road turns into West Limits Road/South Alma Road and it continues to follow this road south through the west side of the village and then back into the town of Alma. About 1,400 feet south of Shoemaker Road, the main turns east and runs on a new corridor along a property line to the same end point as Route A.3.

Route A.4 consists of a 16-inch steel main that starts at the end point described for Route A.3 in the town of Alma, Jackson County, and runs south on a new corridor along a property

line for approximately 1,500 feet where it turns east and runs on new corridor along another property line to Sission Road. At this point, Route A merges with Route B and heads south along Sission Road and then east along Prindle Road. At the point where Prindle Road veers southeast, the main continues east along an existing electrical corridor and then south on new corridor along a property line to Arnold Road where the proposed Alma DR is to be located. It then follows Arnold Road approximately 300 feet south of Prindle Road. This common portion of Segment 4 is about 2.5 miles long.

Alternate A.4.1 runs south along a parcel line to the north right-of-way of Prindle Road. This alternate eliminates approximately 1,300 feet of the originally proposed 4-inch branch main to Hixton, (Alternate A.11). It then continues east along the north right-of-way of Prindle Road to Sission Road. This alternate is being proposed to avoid potential conflicts with future development in the area. It also eliminates the risk of exposure or third-party damage that may result from dredging and/or expansion of the existing ponds just south of the originally proposed route. It would also reduce wetlands impacts and it is estimated to reduce the construction timeframe and cost.

Route B.4 consists of a 16-inch steel main that starts at the end point described for Route B.3 in the town of Alma, Jackson County, and runs east on new corridor along a property line to Sission Road. It then runs south along Sission Road for about 1,500 feet, then merges with Route A as it continues south and then east along Prindle Road. At the point where Prindle Road veers southeast, the main continues east along an existing electrical corridor and then south on a new corridor along a property line to Arnold Road. It then follows Arnold Road approximately 300 feet south of Prindle Road. This common portion of Segment 4 is approximately 2.5 miles long.

Alternate B.4.1 starts at the original route about 2,800 feet north of the intersection of Prindle Road and Sission Road. It heads south along the west right-of-way of Sission Road until it intersects the original route in the southeast corner of Prindle Road and Sission Road. WG is proposing this alternate because it would reduce wetland impacts and cost less to construct. It would also have fewer “potentially sensitive buildings” close to the pipeline centerline.

Alternate AB.4.2 angles southeast from the transmission corridor through agricultural land to the east side of the parcel line. WG is proposing the alternate route to avoid impacts to a large commercial septic system on a landowner’s property affected by the original route. This route also reduces the number of “potentially sensitive buildings” close to the proposed pipeline and it is estimated to reduce the construction timeframe and cost.

Route A.5 consists of a 16-inch steel main that starts at the end point described for Route A.4 in the town of Alma, Jackson County, and extends south along Arnold Road to Carol Road where it runs east along Carol Road for approximately 1,400 feet. From there, it heads south on a new corridor along a property line into the town of Adams, Jackson County. The main continues south along the property line through the town of Adams until approximately 1,300 feet south of East Snow Creek Road. At this point, Route A merges with Route B. Route A turns east and follows a property line to Highway 12 and then Odeen Road to an existing electrical corridor to the east side of the railroad. This common portion of Segment 5 is approximately 0.3 of a mile long.

Alternate A.5.1 extends south from Prindle Road along property lines and new corridor through agricultural land and a tree farm until it reaches East Snow Creek Road. It then continues southeast along an electric distribution corridor to Carol Road. It follows Carol Road right-of-way east for a short distance and then follows new easement until it meets Arnold Road. This alternate route would require a new Alma DR location and would eliminate the originally proposed Alma Distribution, (A.12). The **Alternate Alma DR** is located just north of the intersection of Old 95 Road and Avon Road and would connect into the existing distribution main along Old 95 Road. WG has indicated that the alternate route is being proposed because it will reduce wetland impacts, reduce the number of "potentially sensitive buildings" close to the pipeline centerline, and will reduce the construction timeframe and cost. This route also provides an alternate route for 2 miles of the common portion of the original AB.4.

Alternate A.5.2 is located west of the original route and extends south from Carol Road and Arnold Road primarily along property lines through mostly agricultural land. WG is proposing this alternate because it would impact less wetland and the construction cost is estimated to be less.

Route B.5 consists of a 16-inch steel main that starts at the end point described for Route B.4 in the town of Alma, Jackson County, and runs southeast on a new corridor along tree lines to Highway 12. It continues south along Highway 12 to Garage Road where the proposed Alma DR is to be located. The main then heads east along Garage Road to the east side of the railroad and continues south along the railroad to East Gilbert Road. Then it shifts to follow North West Road south for about 1,400 feet until it reaches the railroad right-of-way. It continues along the railroad into the town of Adams, Jackson County. At Rush Road and North Odeen Road it shifts to the east to follow North Odeen Road south and then west along County Highway E to the railroad. It continues south along the railroad and then follows an existing electrical corridor and North Odeen Road west across Highway 12. This common

portion of Segment 5 is approximately 0.3 of a mile long. There is no alternate proposed for this common segment because there is no other existing corridor closer to the Black River to connect the two routes prior to crossing the Black River.

Route A.6 consists of a 16-inch steel main that starts at the end point described for Route A.5 in the town of Adams, Jackson County, and continues south along the railroad, across the Black River and into the town of Brockway, Jackson County. The main continues south along the railroad until it intersects Highway 54 where the proposed Black River Falls DR is to be located.

Route A.7 consists of a 12-inch steel main that starts at the proposed Black River Falls DR at the intersection of the railroad and Highway 54 in the town of Brockway, Jackson County. The first 0.5 of a mile or so south of the Black River Falls DR that runs along the railroad to West Bauer Road is a common segment for Route A and Route B. This is a common segment because it is the shortest and most cost effective route to get to the point where the two routes diverge and follow different corridors. Route A then diverges east from Route B along West Bauer Road to an ATV trail approximately 4,800 feet east of Krome Road where it heads south to Castle Mound Road. At Castle Mound Road it turns east and runs along Castle Mound Road to Brockway Road where it heads south for approximately 1 mile to an ATV trail. The main then heads southeast along a combination of ATV trails and forest roads through the town of Manchester, Jackson County, to Hunters Haven Road in the town of Millston also in Jackson County. It then heads south along Hunters Haven Road to Stanton Creek Road and follows Stanton Creek Road east to Cut-off Road. The main continues south along Cut-off Road and then south along Stanton Creek Road to an existing cleared pathway that heads southwest just northeast of I-94. It follows this pathway southwest across I-94 to Railroad Street on the west side of I-94. At this point, Route A merges with Route B as it runs southeast along Railroad Street through Millston to the railroad at the south end of Millston. This common portion of Segment 7 is approximately 0.5 of a mile long.

Alternate A.7.1 heads southeast from the original route and crosses forested area to the intersection of Haven Road and a Jackson County forest road. It is being proposed because it is estimated to reduce the construction timeframe and cost.

Route B.7 consists of a 12-inch steel main that starts at the proposed Black River Falls DR at the intersection of the railroad and Highway 54 in the town of Brockway, Jackson County. The first 0.5 of a mile or so south of the Black River Falls DR that runs along the railroad to West Bauer Road is a common segment for Route A and Route B. This is a common

segment because it is the shortest and most cost effective route to get to the point where the two routes diverge and follow different corridors. Route B then diverges southeast from Route A along the railroad through the town of Brockway, the town of Manchester in Jackson County, and into the town of Millston in Jackson County. Just east of Browns Crossing Road, the main diverges from the railroad parallel to a Ho-Chunk trust property line. It then continues along the railroad southeast to Railroad Street. At Railroad Street, Route B merges with Route A as it runs southeast along Railroad Street through Millston and back to the railroad on the south end of Millston. This common portion of Segment 7 is approximately 0.5 of a mile long.

Alternate AB.7.2 diverges from the originally proposed route within the Railroad Street right-of-way onto easements on private property until it crosses to the south side of County Highway O. This alternate is being proposed to avoid potential conflicts with other utilities. It is also estimated to cost less to construct.

Route A.8 consists of a 12-inch steel main that starts at the end point described for Route A.7 in the town of Millston, Jackson County, and heads southwest crossing the railroad and Highway 12 to Millston Road. It then follows Millston Road south and southeast as it turns into Arcadia Avenue and continues into the town of Grant in Monroe County to Highway 12. At the intersection of Arcadia Avenue and Highway 12, Route A merges with Route B and heads southeast along Highway 12 to approximately 1,400 feet south of County Highway EW in the town of Lincoln, Monroe County. This common portion of Segment 8 is approximately 1.3 miles long. An alternate was not proposed for this common segment because there is no other existing corridor that runs north to south in this area. Diverging from the Highway 12 corridor would result in a full 75 feet of tree clearing in highland forested areas and cause accessibility issues not only during construction but for ongoing operations and maintenance.

Route B.8 consists of a 12-inch steel main that starts at the end point described for Route B.7 in the town of Millston, Jackson County. It heads southeast along the railroad for approximately 2.8 miles until Highway 12 veers to the south away from the railroad. At this point, the main veers south along Highway 12 and follows Highway 12 to Arcadia Avenue in the town of Grant in Monroe County. At the intersection of Arcadia Avenue and Highway 12, Route B merges with Route A and heads southeast along Highway 12 to approximately 1,400 feet south of County Highway EW in the town of Lincoln, Monroe County. This common portion of Segment 8 is approximately 1.3 miles long. An alternate was not proposed for this common segment because there is no other existing corridor that runs north to south in this area. Diverging from the Highway 12 corridor would result in a full 75 feet

of tree clearing in highland forested areas and cause accessibility issues not only during construction but for ongoing operations and maintenance.

Route A.9 consists of a 12-inch steel main that starts at the end of Route A.8 in the town of Lincoln in Monroe County and runs west along a property line for approximately 500 feet where it then turns south and runs on a new corridor along property lines and/or tree lines into the town of LaGrange in Monroe County. Once the main reaches the intersection of Highway 21 and County Highway ET, it follows County Highway ET south and then continues east along Flare Avenue. Approximately 1,000 feet west of Flower Road, Route A merges with Route B and continues east until approximately 1,700 feet east of Flower Road. At this point, it turns south and follows a property line to WG's Tomah Propane Air Plant property where the proposed Tomah DR is to be located. This common portion of Segment 9 is approximately 0.8 of a mile long. An alternate is not proposed for this common segment to avoid future conflicts with subdivision developments platted adjacent to Flare Avenue.

Alternate A.9.1 heads southwest from the original route from U.S. Highway 12 and continues mainly through pasture until just north of County Highway "E." It is being proposed because it would reduce the total area of disturbance and it is expected to reduce construction time and cost less than the original.

Alternate A.9.2 heads southeast from the original route and continues through mostly agricultural land until it intersects the original route. WG is proposing this alternate because it would reduce the amount of area disturbed by the project and it is estimated to cost less and take less time to construct than the original.

Alternate A.9.3 heads southwest from the original route and continues through agricultural land until it intersects the original route just north of Charcoal Road. WG is proposing this alternate because it would reduce the area of disturbance and it would cost less and take less time to construct.

Alternate A.9.4 heads southeast from the original route and continues diagonally through agricultural land until it intersects the original route just north of Elgin Avenue. It is being proposed because it reduces the area of disturbance and its construction is estimated to take less time and cost less.

Route B.9 consists of a 12-inch steel main that starts at the end of Route B.8 in the town of Lincoln in Monroe County and continues south along Highway 12 to Bluegrass Avenue. At Bluegrass Avenue, it veers south away from Highway 12 to follow a property line along a

new corridor for approximately 4,000 feet and then turns east to follow Highway 12 south again to County Highway M. The main then follows County Highway M west and then south into the town of LaGrange, Monroe County. At the intersection of County Highway M and Elgin Avenue, it veers west along Elgin Avenue for approximately 250 feet and then runs south along a new corridor through agricultural fields for approximately 2,600 feet until it meets up with County Highway M again. It continues to follow County Highway M south until approximately 2,000 feet south of Elk Road where it runs south on a new corridor along a property line until just south of Highway 21 and the railroad. It then heads east and then south along property lines through an agricultural field for approximately 4,000 feet until it meets Flare Avenue. At this point, Route B merges with Route A and continues east until approximately 1,700 feet east of Flower Road. At this point it turns south and follows a property line to WG's Tomah Propane Air Plant property where the proposed Tomah DR is to be located. This common portion of Segment 9 is approximately 0.8 of mile long. An alternate is not proposed for this common segment to avoid conflict with future subdivision developments in the surrounding area.

Alternate B.9.1 starts at the original route on the south side of Cinder Avenue and heads southeast across agricultural land/pasture until it intersects the original route approximately 250 feet north of the intersection of US Highway 12 and Courtland Avenue. WG is proposing this alternate because it would reduce the area of disturbance, slightly reduce wetland impacts, and reduce the construction time and cost.

Routes A.10 and B.10 consist of an 8-inch plastic main that starts at the outlet of the proposed Augusta DR in the town of Bridge Creek in Eau Claire County approximately 500 feet east of the County Highway M and Baldwin Street intersection and extend west along Highway 12/Baldwin Street to the existing distribution main at the intersection of County Highway M and Baldwin Street.

Route A.11 consists of a 4-inch steel main that branches from the 16-inch steel main approximately 200 feet east and 1,300 feet north of the intersection of Prindle Road and Kass Road in the town of Alma, Jackson County. From this point, it heads south along a property line to Prindle Road and then runs west along Prindle Road to County Highway F. It follows County Highway F south to County Highway FF and then heads west along County Highway FF to South Alma Road. The proposed Hixton DR is to be located there in the town of Hixton, Jackson County.

Route B.11 consists of a 4-inch steel main that branches from the 16-inch steel main about 1,300 feet south of the intersection of South Alma Road and Shoemaker Road in the town of

Alma, Jackson County. It then continues south along South Alma Road to County Highway FF where the proposed Hixton DR is to be located in the town of Hixton also in Jackson County.

Route A.12 consists of a 6-inch steel main that starts at the outlet of the proposed Alma DR at the intersection of Arnold Road and Prindle Road in the town of Alma, Jackson County, and extends east along Prindle Road to the existing distribution main along Highway 12.

There is no segment 12 for Route B because the proposed Alma DR for Route B is located directly adjacent to the existing distribution along Highway 12.

Routes A.13 and B.13 consist of an 8-inch plastic main that starts at the outlet of the proposed Black River Falls DR just west of the intersection of the railroad and Highway 54 in the town of Brockway in Jackson County and extends southwest along Highway 54 to the existing distribution main at South Roosevelt Road in the city of Black River Falls.

Alternate AB.13.1 and the Alternate Black River Falls DR are proposed for the northwest corner of West Bauer Road and the railroad right-of-way. The alternate DR site is 2,754 feet southeast of the originally proposed site. The alternate site would be 200 by 200 feet rather than the 150 by 150-foot site for the original due to the increased available space at the alternate location. The added distance from the original site to the alternate site would require that the proposed pipe be increased from 12 inches to 16 inches in diameter. It would also require the addition of 2,600 feet of distribution route, AB.13.1 and reduce the originally proposed distribution main by 2,400 feet. Alternate AB.13.1 extends from the Alternate Black River Falls DR west along West Bauer Road within road right-of-way to the originally proposed distribution main at State Highway 54. The Alternate DR is being proposed because the landowner already had development plans for the original site and the alternate site is located in a more remote area, which would reduce the amount of public impact. The number of "potentially sensitive buildings" close to the pipe would also be reduced.

Routes A.14 and B.14 consist of a 12-inch steel main that starts at the outlet of the proposed Tomah DR on the Tomah Propane Air property and extends to the existing distribution main at County Highway ET and West Veterans Street in the city of Tomah.

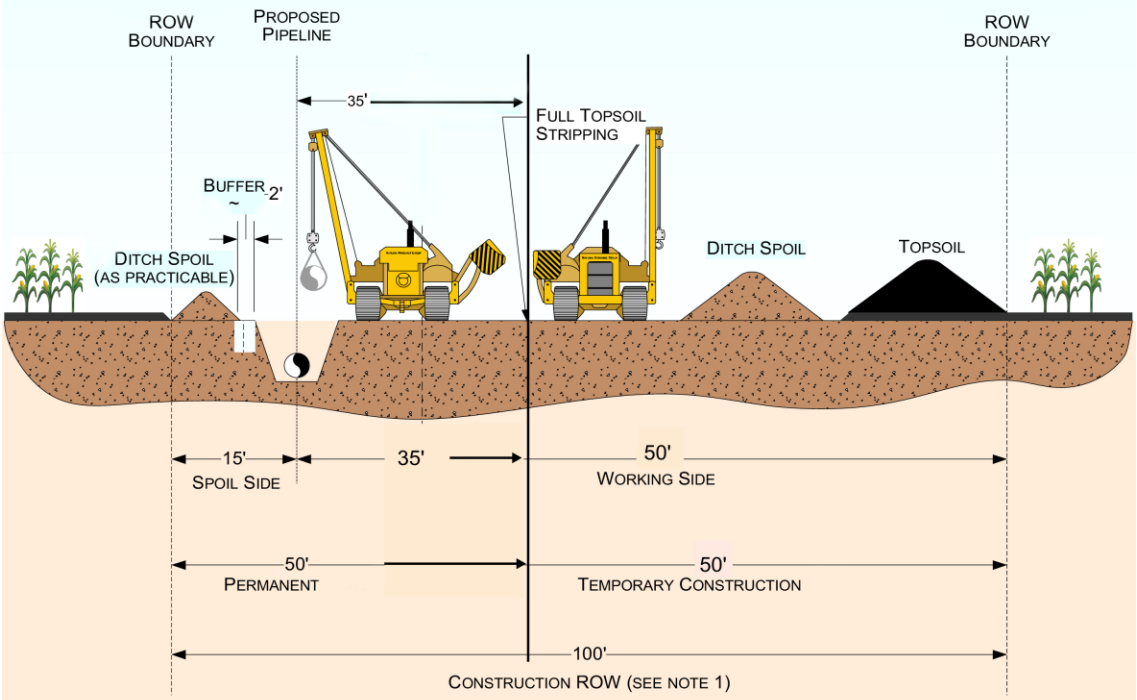
Routes A.15 and B.15 consist of a 4-inch steel main that branches from the 16-inch main at the intersection of Highway 12 and County Highway EW in the town of Lincoln in Monroe County and continues east along County Highway EW to approximately 1,400 feet east of Arctic Road where the future Warrens DR is to be located.

The **Alternate Warrens DR** site is proposed for easement on private property south of County Highway "EW" approximately 200 feet east of Arctic Road. It is about 1,100 feet west of the original site. The Alternate Warrens DR eliminates about 1,150 feet of the originally proposed Warrens 4-inch branch (Route AB.15) and requires an extension of approximately 60 feet of 4-inch branch to the alternate site. **Alternate AB.15.1** extends from the originally proposed route along County Highway EW directly south onto easement on private property where the alternate site is proposed. The alternate DR site is being proposed to allow for flexibility in routing and design of a future distribution main extension along Arctic Road instead of east along County Highway EW. The alternate location also reduces the area of disturbance and the number of "potentially sensitive buildings" close to the pipe centerline.

Right-of-Way Requirements

WG proposes to acquire a 50-foot wide corridor of permanent easement for the proposed pipeline. In addition, 50 feet of temporary construction easement would be acquired in agricultural areas to allow enough space for full corridor stripping of the topsoil. In non-agricultural areas, WG proposes to acquire 25 feet of temporary construction easement. Refer to the sketch on the next page, which shows the proposed agricultural corridor during construction.

Source: Application of Wisconsin Gas LLC for Authority to Construct a Lateral,



NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 100' WIDE CONSISTING OF 50' OF PERMANENT RIGHT-OF-WAY AND UP TO 50' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, AND OTHER SPECIAL CIRCUMSTANCES AS SHOWN IN PROJECT PLANS.
2. THIS DRAWING REFLECTS "FULL" TOPSOIL STRIPPING PROCEDURE.
3. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN CONFIGURATION APPROVED BY THE INSPECTOR.
4. MINIMUM COVER 48" IN AGRICULTURAL.

III. CONSTRUCTION PROCESS

If approved, WG will prepare a project-specific set of construction drawings as well as an Erosion Control Plan (ECP). These drawings and plans will be prepared and submitted to DNR prior to construction. No construction activity will occur on the site until the DNR Construction Site Erosion Control permit is issued and appropriate erosion prevention measures are installed. Throughout construction, best management practices (BMPs) for stormwater management and erosion control will be utilized. Typical construction standards and practices to be followed are found on the DNR website: http://dnr.wi.gov/topic/stormwater/construction/.

Construction of Associated Facilities

The associated facilities are anticipated to be constructed within the same timeframe as the pipe installation. At the associated facility locations applicable erosion control measures will be installed prior to construction. The area will be cleared, graded and top soil segregated and stockpiled. Concrete slab foundations will be poured where required and buildings placed over the regulation, instrumentation, heating, and odorization facilities. Fencing will enclose the site to keep the facilities secure and a gravel pad is typically placed around the above grade appurtenances. A gravel access drive is typically built to each facility to allow company vehicles to safely enter the facility location from the roadway.

Inbound Materials

It is anticipated that the majority of pipe for the project will be brought in via rail. WG's contractor would unload the pipe from the railcars and on to flatbed truck trailers. From that point the pipe material would be transported by truck to a nearby laydown or staging area. Valves, fittings, and minor items such as pipe primer, wrap, and epoxy coating would be brought in by truck to one of the laydown or staging areas. Aggregate materials, such as sand and gravel will be trucked in from nearby quarries that are yet to be determined.

Outbound Materials

Any materials that are excavated and deemed not suitable for backfill, mainly spoils that contain rock will be transported off site, unless prior arrangements with landowners have been made. These materials will be transported to local fill areas or quarries that have yet to be identified. Horizontal directional drilling mud (bentonite) will be removed from the

drilling sites and placed in an approved upland area or disposed of in accordance with applicable permits or regulations.

Clean Fill Materials

Clean fill materials will be brought in from nearby quarries that have yet to be identified. The typical clean fill materials will consist of sand for padding around the newly installed pipeline if needed, crushed stone for driveway and shoulder restoration, clean washed stone for stream bank and slope restoration, and rip rap for steep sloped areas to prevent wash outs.

Contaminated Materials

At this time it is not anticipated that contaminated materials will be encountered. If contaminated material is encountered, WG would follow Environmental Procedure EN-1205 – Management and Handling of Impacted Soils Encountered during Routine Underground, Excavation or Trenching Work. That procedure is provided in Appendix C of the Application to the Public Service Commission of Wisconsin for Authority to Construct the West Central Wisconsin Lateral – Environmental Information.

Stockpile Areas

All stockpile areas will be confined to the construction right-of-way or designated staging areas.

Construction

WG will begin gas pipeline construction following receipt of all permits and right-of-way acquisition. In general, WG would follow the typical pipeline construction sequence that proceeds in the manner of an outdoor assembly line, composed of specific activities that make up the linear construction sequence. These operations include surveying and staking of the right-of-way; clearing and grading; trenching; pipe stringing; bending; welding; lowering-in; backfilling; cleanup, hydrostatic testing, and restoration. In addition to these standard pipeline construction steps, WG would use special construction techniques, when necessary, at certain features, such as where the pipeline traverses steep slopes or roads.

Construction and restoration in agricultural areas will use the methods described in the Agricultural Mitigation Plan (AMP). Refer to Appendix II for the text of the AMP.

Construction equipment used on pipeline projects include: dozers, graders, excavators, trenchers, dump trucks, backhoes, side booms, ATV's, road bore rigs, horizontal directional drill rigs, pickup trucks, rock trenchers, vacuum excavators, rippers, tillers, rock picking machines, welding rigs and trucks, and x-ray trucks.

Surveying and Staking
The first construction step involves surveying and staking the pipeline centerline, construction right-of-way limits, temporary extra workspace, and known underground facilities that cross or parallel the proposed pipeline. Construction activities and equipment travel require the use of temporary work space that is outside the permanent easement. The temporary use of this additional space is negotiated with the landowner.

For the portions of the project that are constructed in agricultural lands, a permanent easement of 50 feet and a temporary construction easement of 50 feet will be used. For portions of the project adjacent to road right-of-way and in non-agricultural lands, a 50-foot permanent easement will be used adjacent to the road right-of-way and the non-paved right-of-way will be used for temporary work space. To minimize disturbance to environmentally sensitive areas such as wetlands, waterways, and forests, a 75-foot wide corridor consisting of a 50-foot permanent easement and a 25-foot temporary construction easement will be used in these locations.

The majority of access points to the pipeline right-of-way will occur at locations where the proposed route crosses public or private right-of-way. Additional temporary access points have been identified where necessary. The construction contractor may, for convenience or safety reasons, seek to arrange alternate access with private landowners. Refer to Section 3.4.9 of the *Application to the PSC for Authority to Construct a Lateral* for additional information on access issues.

In places where temporary access roads are constructed over agricultural land, topsoil will be stripped and temporarily stockpiled. If the temporary roads in agricultural lands require gravel stabilization, geo textile construction fabric will be placed below imported rock material for additional stability and to provide a distinct barrier between imported rock material and the subsoil surface.

Clearing and Grading
Clearing and grading is the first construction operation to take place on a parcel. This will provide a level area to facilitate pipe-laying operations and transport of required construction equipment. Clearing will involve the removal of trees and brush from the work area. Some

non-woody vegetation will be removed by mowing; however, crops such as small grains with a limited amount of biomass may be left in place to minimize soil erosion. A fence crew will operate with the clearing crew to cut and brace existing fencing and install temporary gates along the right-of-way. This crew will also install necessary fencing near certain sensitive areas as required by agencies and at pastures that contain livestock.

WG will work with each landowner regarding the cutting of merchantable timber necessary for construction of the pipeline. Timber may be cut and left along the edge of the utility right-of-way for the landowner's use. If the landowner does not want to retain ownership of the material, it will be disposed of. Methods of disposal of trees, brush and stumps may include burning, burial, or chipping on a landowner approved and DNR permitted location, or removal to a DNR permitted location.

Vegetation from cherry and walnut trees can be toxic to livestock. All debris from these trees will be removed from areas that are actively pastured so that it will not be allowed to come into contact with livestock and may not be stockpiled on site.

The materials that will be excavated will be comprised mostly of topsoil, subsoil, and underlying parent material. All excavated material is expected to be stockpiled along the pipeline right-of-way. In areas where the subsoils have significantly different productive characteristics compared to the underlying parent material, the triple-lift method will be used to segregate and stockpile these layers to maintain their productivity. The triple-lift method is described in detail on page 38. In upland areas it is anticipated that dozers will scrape the topsoil layer of earth to the far side of the right-of-way. In wetland areas the wetland topsoil would primarily be separated during the trench excavation rather than disturb the entire pipeline right-of-way. After the top soil has been segregated, excavators will dig the pipeline trench and place the subsoil next to the topsoil in the pipeline right-of-way. If rock is encountered that cannot be removed with an excavator, a rock saw, trencher, or rock pick would cut in the trench to the desired depth of cover. In general excavated materials will not be exported from the site. Rock that is removed and not suitable for backfill may be trucked off site to a quarry or other approved disposal area.

WG has indicated that crews will follow Best Management Practices for the control of invasive species along the proposed right-of-way in accordance with Wis. Admin Code Ch. NR 40. For additional information about WG's plans for controlling invasive species, refer to section 3.6.4.4 of the Application to the PSCW for Approval of the West Central Wisconsin Lateral project.

Pipeline construction may inconvenience farmers by cutting livestock fences within the construction work area. Measures to protect livestock and crops during excavation activities will be determined in cooperation with landowners. Precautions will be taken to adequately protect, repair, and replace damaged drainage systems. Tile lines that are cut or removed during the trenching process will be repaired promptly after the pipeline has been installed in the trench.

Erosion control methods and materials will vary depending on the specific construction activities, time of year, and site soil and slope conditions at the time of construction. Best Management Practices will be implemented in accordance with WG's typical construction practices and DNR technical standards for construction site erosion and sediment control. When applicable, only materials identified on the Wisconsin Department of Transportation's Product Acceptability List (PAL) will be used for implementation of the Erosion Control Plan (ECP). The ECP will outline the anticipated sequencing for the pipeline construction along with minimum construction-time erosion control practices. A general description of construction phases will be outlined in the ECP and include clearing and grubbing, pipe and associated facility installation, and restoration.

Depending on site conditions, off-site diversion methods for excess water may be used as a construction time erosion control practice for the proposed pipeline. The ECP will outline the materials and methods if off-site diversions are necessary.

During active construction, qualified WG staff or representatives will inspect erosion and sediment control practices a minimum of once per week, and within 24 hours following a rainfall of 0.5 inches or more in accordance with Wis. Admin. Code ch. NR 216 and the WPDES General Permit Conditions. Written documentation of the inspection will be maintained by WG or their designated representative. The documentation will describe site conditions and any corrective measures taken, if applicable. All corrective action will be taken within 24 hours of inspection unless soil conditions are such that taking the corrective action will cause excessive erosion, soil disturbance, or environmental impact. The decision for the timing of the corrective action will be made by the qualified WG staff or its representatives with documentation provided to the appropriate agencies.

Temporary erosion control measures, such as sediment barriers and temporary slope breakers, will be installed during the clearing and grading activities. Discharge of runoff to agricultural fields will be avoided where possible. Discharge of runoff to adjacent certified organic fields will be prohibited. Temporary trench plugs will be used to limit the flow of water within the trench.

Pipe Stringing
After clearing and grading, sections of pipe are transported by truck from pipe storage areas to the construction right-of-way and positioned along the pipeline route. Pipe stringing can be conducted either before or after trenching.

Bending and Welding
After pipe stringing, the sections of pipe will be bent, as necessary to fit the contours of the terrain, placed on temporary supports along the edge of the trench; aligned; and welded together. A qualified inspector will visually and radiographically inspect completed welds. An external coating applied at the mill will protect piping. Following inspection, a coating will be field-applied to each weld joint. The pre-applied coating on the rest of the pipe will be inspected and repaired as necessary.

Trenching
Trenching will be accomplished using a backhoe, a trackhoe, or a trenching machine in some cases. Material excavated during trenching will be temporarily piled to one side of the construction corridor, with topsoil and subsoil separated in agricultural land. Any material not suitable for backfill, or in excess, will be hauled to a suitable location. Proper erosion control practices will be employed to minimize erosion during trenching and construction activities. The trench will be approximately 6 feet deep and 4 feet wide. In areas where the soil has limited cohesion, the trench width may need to be widened to allow for benching or sloping, ensuring adequate depth of cover over the gas pipe is achieved. In agricultural lands, trench depth will be sufficiently deep to allow a minimum of four feet of cover over the top of the pipeline. The trench bottom will be inspected to ensure it is free of rock and debris. If required, sand or soil bedding material will be placed in the trench bottom.

If free water is found present in excavated materials, the excavated materials will be stockpiled in the pipeline right-of-way and allowed to dewater. Care will be taken to divert any silt laden water from entering a water body with the use of silt fence, wattles, or other similar materials. WG intends on performing additional geotechnical work that would assist in locating areas of high water tables. Pumps and dewatering structures are also anticipated to remove as much water from a trench to minimize free water in excavated materials.

Lowering-in
The pipeline will be lowered into the trench using side-boom tractors. A final inspection will ensure the pipeline is properly placed on the trench bottom, that all bends conform to trench alignment, and that the pipe coating is not damaged.

Trench Breakers and Tile Repairs
Upon completion of lowering-in activities, trench breakers (plugs) will be installed as needed in sloped areas to prevent subsurface water from moving along the pipe. Permanent tile repairs will be completed.

Backfilling
After the pipeline is installed in the trench, the subsoil will be placed back in the trench and then the topsoil redistributed over the trench and working area to maintain soil productivity. To minimize the potential for soil compaction in agricultural areas, certain construction techniques may be suspended when warranted due to wet weather conditions or soil de-compaction techniques used.

All soil removed by construction of the pipe trench will be replaced in the trench at the same location upon completion of installation of the pipe. No soil will be removed from the site. Rock that is removed from the pipe trench that is not suitable for backfill will be taken to either a local quarry or approved disposal area to be determined upon final route selection. WG has indicated that it intends to remove rocks larger than 3 inches that would be in the workable portions of agricultural fields. If the pre-construction rock content is greater than this on some agricultural lands, the agricultural inspector and WG will establish the baseline rock content during pre-construction planning.

Any drilling mud will be taken to an approved upland area or disposed of in accordance with applicable permits or regulations.

If restoration of cropland is not completed during the growing season, WG will need to determine, based on the time of the completion of restoration, whether a cover crop will be planted.

Cleanup and Initial Restoration
The right-of-way and acquired easement will be restored to preconstruction conditions. Surface grading will be done to reestablish natural contours, and re-vegetation will be compatible with preconstruction conditions and adjacent vegetation patterns.

Cleanup procedures will begin as soon as weather and soil conditions permit after backfilling of the trench. Where necessary, soil compaction will be alleviated and any segregated topsoil will be replaced. Rocks will be removed from the right-of-way so that the size and distribution are similar to the adjacent land. The right-of-way will be graded as nearly as practicable to preconstruction contours, except as needed for soil stability purposes and the

installation of erosion control measures. Trash and debris that remain on the right-of-way will be removed and disposed of in approved areas in accordance with federal, state, and local regulations.

Fences that were cut or removed during construction will be repaired or replaced. Pipeline markers will be installed along the length of the pipeline in accordance with DOT specifications.

Hydrostatic Testing
The pipeline will be hydrostatically tested and caliper pigged prior to service. After backfilling is completed, sections of the pipeline will be filled with water and tested to pressure levels higher than the maximum design operating pressure of the pipeline in accordance with DOT standards. These procedures are repeated along the entire length of the new pipeline. After completion of testing, the test water will be disposed of in accordance with federal, state and local permit requirements.

Final Restoration
Re-vegetation will be completed in areas of perennial vegetation disturbed by construction activities. WG will not seed active or rotated croplands unless specifically requested to do so in writing by the landowner or land management agency. Seedbed preparation requirements for agricultural land are specified in the Agriculture Mitigation Plan.

Erosion and sediment controls will be implemented as needed and maintained until final restoration and stabilization are achieved.

Triple-Lift Soil Segregation Method

The triple-lift method excavates and stores the subsoil layer separately from the underlying parent material. The purpose of this practice is to preserve the distinctive soil layers in order to maintain productivity. In soils that would benefit from triple-lift, the subsoil is identified through soil type analysis and subsequent onsite sampling to be significantly different from both the topsoil and the underlying parent material. This type of soil segregation would only be done over the trench. This process for identifying which soils would benefit from the triple-lift method is described in detail starting on page 64 and the soils that DATCP has identified as candidates for the triple-lift method are listed in Table 21 starting on page 67.

The following is a condensed description of how triple-lift candidate soils are identified. Only land that is cultivated cropland, rotated pasture, or in government set-aside program

would be considered for triple-lift procedures. The analysis that DATCP did to identify triple-lift candidate soils also identified soils with bedrock above the anticipated 6-foot depth of the trench. The criteria for soils qualifying as "candidates" for triple-lift procedures are as follows:

At least 35% of the material in the lower subsoil layers (parts of the "B" soil horizon) or the underlying glacial outwash (the "C" soil horizon or parent material) must be greater than 2 mm; or more than 20% of this material must be greater than 4.7 mm; or both. This layer must also be a minimum of 6 inches thick for the soil to qualify for the triple-lift method.

No more than 15% of the material in the upper subsoil layers of the "B" horizon is greater than 2 mm and these layers are at least 6 inches in thickness.

The tract being considered (contiguous property owned by the same landowner) must have at least 40% qualifying soils that will be encountered by the pipeline trench. Typically, a tract is a 40-acre parcel and the length of the trench on that tract would be just over 1,000 feet long. These parameters represent the minimum standards for determining which tracts are suitable for the triple-lift method. DATCP has identified these parcels and has created a GIS shapefile with that information. Individual farmland owners who have shorter tracts where the soils would benefit from the triple-lift method may wish to request this method on their property if their land is adjacent to larger tracts where triple-lifting will be done or if their land is adjacent to other shorter tracts of triple-lift suitable soils that, when combined, would meet or exceed the 1,000-foot long benchmark. The 40% minimum may also be relaxed on larger parcels.

WG should inform property owners who have soils within the trench portion of the right-of-way that meet the above triple-lift soil handling criteria, and offer those landowners the option of implementing the triple-lift soil trenching procedures on their land during construction. In locations where triple-lift procedures could be done, it may be necessary for WG to acquire additional temporary easements beyond the 100-foot wide construction corridor that is proposed for agricultural areas. Additional right-of-way width may be needed for stockpiling of the extra soil pile.

WG should include an explanation of the triple-lift soil handling procedures in the construction bid documents along with the potential locations. WG should also review the process and the potential locations with bidders during the pre-bid job showing to ensure the potential contractor is well acquainted with the expectations. WG should review this process and the potential locations with the selected construction contractor during the construction

"Kick-off" meeting. The triple-lift soil handling process should also be included in WG's environmental training sessions required for all field personnel prior to working on the construction right-of-way.

Prior to construction, the Agricultural Inspector will sample the soils in the areas anticipated to benefit from triple-lift procedures to determine the specific locations where triple-lift handling will be done.

At the time of construction, all of the topsoil will be stripped (first lift) and stockpiled along the edge of the working side of the construction right-of-way. If the topsoil layer is thicker than 12 inches, the contractor will strip at least the top 12 inches as the first lift. In areas slated for triple-lifting, typically a backhoe will remove the upper portion of the subsoil (second lift) and place it on the non-working (spoil) side of the construction right-of-way as far from the trench as the reach of the equipment will allow. Where the subsoil material changes to sand, cobbles, or gravelly material, the backhoe operator will place this underlying material (third lift) between the trench and the second-lift pile on the non-working (spoil) side of the right-of-way. Since the depth at which the underlying material encountered will vary, the boundary between the upper subsoil and the underlying material would be determined visually by the construction and inspection team.

WG would attempt to maintain separation between the subsoil and underlying parent material piles. However, depending on the available workspace and the volume of soil involved, maintaining complete separation between these two piles might not be possible. If the spoil side of the right-of-way does not have enough room to stockpile both the subsoil and parent material piles, the subsoil will be stored on the working side of the right-of-way, next to the topsoil pile. If there is still inadequate space to store all of the parent material on the spoil side of the right-of-way, the remaining parent material may be stored next to the subsoil pile on the working side of the right-of-way if geotextile matting or other suitable method is used to separate the parent material from the subsoil. During backfilling, the operator will replace the entire parent material layer (third pile) in the trench before replacing the subsoil (second pile).

Road and Driveway Crossings

Road and driveway crossings will be accomplished by either open-cut where possible, or by jack and boring under roads where open cut is not possible or practical. The jack and boring method is used to cross roadways or railways with minimal disruption to traffic. Typically, the pipe easement area and additional temporary work space is stripped of topsoil, which is

stockpiled on one side of the workspace. Bore pits are excavated on each side of the obstruction that will be crossed. The entrance and exit bore pits are generally 20 feet by 30 feet in size and range in depth from 6 to 12 feet depending on the depth of cover required for the pipe being installed. The excavated materials from the bore pits will be stockpiled next to the topsoil. If groundwater is encountered in the bore pits it will be pumped from the pits into a dewatering structure. Access pads are installed to allow equipment to move from one side of the road to the other. Tires are also placed on the road surface to allow tracked equipment to cross the roadway without damaging the paved surface. The auger boring machine is set up in the entrance pit and a casing pipe is jacked under the obstruction while the earth is removed by the auger rotating inside casing pipe. The new carrier pipe is attached to the casing pipe and is either pushed or pulled under the road or railway. After the new carrier pipe is installed and tied into the rest of the pipeline, the bore pits will be backfilled with the stockpiled spoil. Access pads and dewatering structures will be removed and the stockpiled topsoil will be replaced to the original grade.

Temporary erosion control measures will be removed after permanent erosion control measures are installed and vegetation is re-established.

Coordination with local officials to minimize traffic disruption will take place prior to construction. WG will obtain applicable federal, state, county, township, and municipal permits before conducting road crossings. Construction timing will be communicated to landowners surrounding the right-of-way or acquired easement area to minimize disruptions including emergency vehicle access. Open cut roads and driveways will be backfilled after pipe installation to allow proper access at all times. If an open cut road crossing requires extensive construction time, provisions will be made for detours or otherwise permit traffic flow while construction is underway. Roads and driveways that are open cut will be restored or repaved.

Staging and Temporary Work Areas

Six staging areas have been identified for the proposed project. Additionally the contractor hired for the project may, for convenience or safety reasons, be able to arrange alternate staging areas with private landowners. If additional staging areas are proposed at a later date, WG will complete an assessment of the site for potential environmental and cultural impacts. If the proposed staging area could have an adverse impact, the proposal will be abandoned.

Construction in Forest Lands

Construction activities that will take place in forest lands will be narrowed to a 75-foot easement (50 feet permanent and 25 feet temporary) to minimize the loss of trees. In the majority of forest lands, WG plans to use existing corridors of cleared space that range from 30 to 75 feet or greater. The types of corridors followed include existing forest roads, town roads, and all-terrain vehicle trails. Right-of-way clearing will be conducted in accordance with permit stipulations and will be limited to the extent needed for construction and operation of the pipeline. Where tree clearing is required, the trees will be cut and stacked along the right-of-way based on landowner preference. Landowners will have the option of retaining ownership of cleared brush or timber. Trees and brush that are cut and stumps that are excavated that the landowner does not choose to retain will be taken care of by burning, mulching, or other approved means. Typically, only the stumps in the trench area are excavated. Stumps in the remainder of the right-of-way are usually cut or chipped at or near ground level.

Certain species of trees like black walnut and black cherry can be toxic to livestock. Care must be taken if these types of trees are encountered to properly dispose of all of the tree material including wood, bark, leaves, roots, and ash to avoid situations where livestock could come in contact with this material.

IV. AGRICULTURAL SETTING

In a 2011 report, the University of Wisconsin Extension researchers describe agriculture's economic contribution to Wisconsin as a whole and to the economies of individual counties.[4] The following paragraphs describe some of the impacts of the agriculture sector's economic contribution to the Eau Claire, Clark, Jackson, and Monroe County economies.

Eau Claire County has the largest workforce of the counties affected by this pipeline project at over 70,000 workers. However, it has the smallest percentage of workers whose jobs are agriculture related. In contrast, almost half of Clark County's workforce is part of the agriculture sector and Clark County has the largest number of agriculture sector workers of any of the five impacted counties. In addition to farmers and farm laborers, agriculture

[4] *Agriculture: Value and Economic Impact* for Eau Claire, Clark, Jackson and Monroe Counties, University of Wisconsin-Extension, Cooperative Extension, 2011, http://www.uwex.edu/ces/ag/wisag/

provides employment for veterinarians; crop and livestock consultants; feed, seed, fuel, and other input suppliers; farm machinery dealers; barn builders; agricultural lenders and other professionals, as well as employees in food processing and other value-added industries. The following table lists the number and percentage of agriculture sector workers in each county of the project area.

Table 8
Workers in the Agriculture Sector

County	Number of Workers	Number of Workers in Agriculture	Percent of Workforce in Agriculture
Eau Claire	70,107	4,481	6%
Clark	16,905	7,696	46%
Jackson	11,533	2,543	22%
Monroe	24,727	4,281	17%

Comparing the four counties in the project area, agriculture accounts for the largest amount of business sales in Clark County. Agricultural business sales also represent the largest percentage of overall county business sales and generate the largest per-dollar additional business sales in Clark County. The following table lists the amount of agricultural business sales, their percentage of the total, and the amount of additional business sales generated by every dollar of agriculture sector sales in each of the four counties.

Table 9
Agricultural Business Sales

County	Agricultural Business Sales	Agriculture as a Percentage of the County's Total Business Sales	Amount of Additional Business Sales in other Sectors Generated by Each Dollar of Agricultural Business Sales
Eau Claire	$1,100 mil	13%	$0.43
Clark	$1,500 mil	63%	$0.47
Jackson	$ 321 mil	25%	$0.31
Monroe	$ 858 mil	26%	$0.28

Agriculture's contribution to overall county income is largest in Clark County. Clark County also has the largest percentage of overall county income coming from agriculture-related businesses, almost half. Agricultural income includes wages, salaries, benefits, and profits of farmers and workers in agriculture-related businesses. The taxes identified do not include

property taxes paid to local school districts. They do include local and state taxes from the economic activity generated by farms and agriculture-related businesses. Of the four counties in the project area, taxes paid by the agriculture sector were largest in Clark County and smallest in Jackson County.

Table 10
Income and Taxes Generated by the Agriculture Sector

County	Agricultural Income	Agricultural Income as a Percentage of total Income	Taxes Paid by Agriculture not Including Property Taxes for Local School Districts
Eau Claire	$274.6 mil	7%	$23.1 mil
Clark	$403.5 mil	47%	$36.2 mil
Jackson	$105.0 mil	17%	$ 9.1 mil
Monroe	$205.1 mil	15%	$16.5 mil

Agricultural Productivity

In 2011, Clark County ranked first out of Wisconsin's 72 counties in the production of milk, third in corn for silage, fifth in oats, and sixth in alfalfa hay.[5] Jackson County ranked fifteenth in the production of oats. Monroe County ranked twelfth in the production of alfalfa hay and eighteenth in milk.

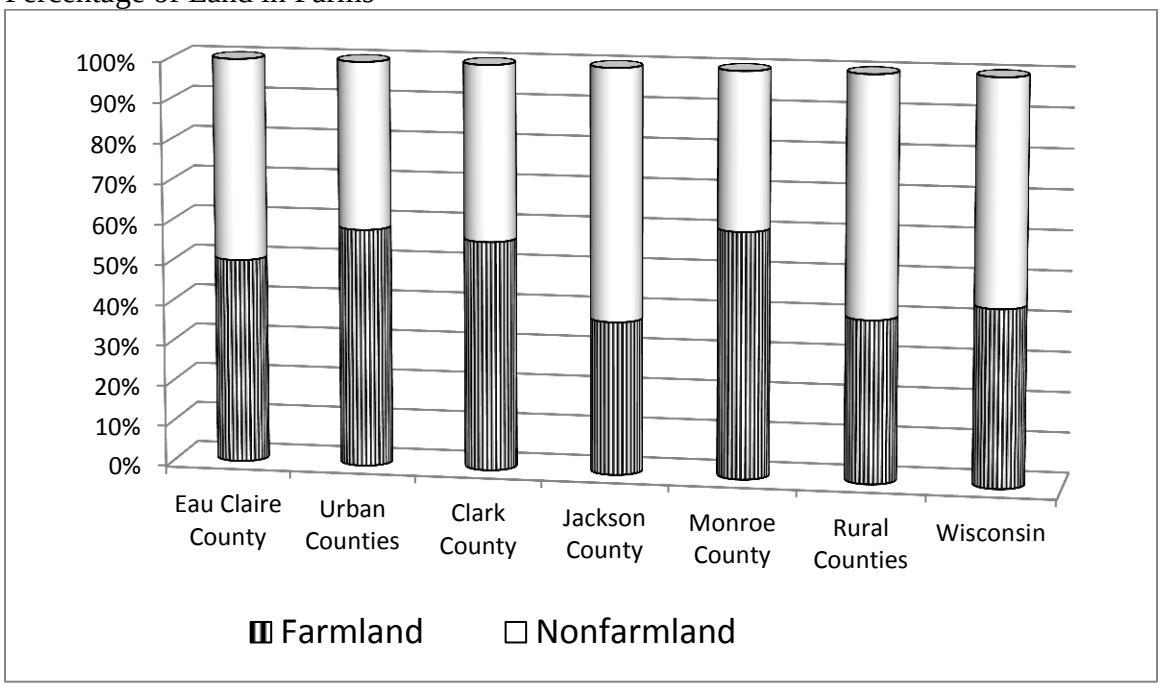
Except for Clark County's corn for grain, all four counties saw increases in the amount of cropland planted to corn for grain and soybeans over the fifteen-year period from 1996 to 2011. During that same period, all four counties saw a drop in the amount of cropland devoted to producing alfalfa hay.

[5] *Wisconsin 2012 Agricultural Statistics*, Wisconsin Agricultural Statistics Service, National Agricultural Statistics Service USDA, Wisconsin Department of Agriculture, Trade and Consumer Protection, 2012, pp. 18 through 54.

Table 11
Acres Planted of Selected Crops for 1996 and 2011

Counties	Acres Planted					
	Corn for Grain		Alfalfa Hay		Soybeans	
	2011	1996	2011	1996	2011	1996
Eau Claire	43,300	38,000	16,800	40,000	19,600	9,100
Clark	50,100	62,900	35,500	84,000	32,400	8,100
Jackson	45,800	35,200	18,000	37,000	19,800	10,100
Monroe	44,400	43,800	28,700	73,000	18,700	6,000

Chart 1
Percentage of Land in Farms



Land in Farms, Number of Farms, and Average Size of Farms

Eau Claire County is classified as an urban county (having an average of 100 or more residents per square mile). Clark, Jackson, and Monroe Counties are classified as rural

counties (each having an average of less than 100 residents per square mile). According to the *2007 Census of Agriculture*, Eau Claire County has 205,375 acres of land in farms,[6] which represents 50.3 percent of the total land area. The average for urban counties is 196,635 acres of land in farms or 58.7 percent of the total county land area. Clark County has 440,376 acres of land in farms, which represents 56.6 percent of the county's land area, Jackson County has 238,978 acres of land in farms, representing 37.8 percent of the county, and Monroe County has 351,306 acres of land in farms, which represents 60.9 percent of the county's land area. The average for rural counties is 220,284 acres of land in farms, representing 40.3 percent of the total land area for rural counties. These can be compared to the average of 213,955 acres or 44.0 percent of land in farms among all Wisconsin counties. Refer to Chart 1 for a graphic comparison of the percentage of land in farms in each of the four counties in the project area, urban counties, rural counties, and Wisconsin.

According to the *Census of Agriculture*, all of the counties in the project area as well as the state of Wisconsin saw an increase in the number of their farms from 1992 to 2007. Those changes are listed in the following table.

Table 12
Change in the Number of Farms, 1992 to 2007

	Number of Farms in 1992	Number of Farms in 2007	Increase in the Number of Farms	Percentage Increase
Eau Claire County	886	1,223	337	38.0%
Clark County	2,010	2,170	160	8.0%
Jackson County	720	945	225	31.3%
Monroe County	1,549	2,115	566	36.5%
Wisconsin	67,959	78,463	10,504	15.5%

The amount of land in farms increased in all four counties that make up the project area from 1992 to 2007. In Wisconsin as a whole, the amount of land in farms declined from 15.5 to 15.2 million acres (a 1.8 percent loss) during this fifteen-year period. The following table lists each county and the state as a whole.

[6]Land in farms consists primarily of agricultural land used for crops, pasture, or grazing. It also includes woodland and wasteland not actually under cultivation or used for pasture or grazing, providing it was part of the farm operator's total operation.

Table 13
Change in the Acres of Farmland, 1992 to 2007

	Acres of Farmland in 1992	Acres of Farmland in 2007	Change in Acres	Percentage Change
Eau Claire County	189,905	205,375	15,470	+8.1%
Clark County	426,884	440,376	13,492	+3.2%
Jackson County	218,145	238,978	20,833	+9.6%
Monroe County	346,398	351,306	4,908	+1.4%
Wisconsin	15,500,000	15,200,000	300,000	-1.8%

The average size of farms decreased in all four of the affected counties as well as in the state of Wisconsin as a whole. Refer to Table 14.

Table 14
Change in Average Size of Farms

	Average Acres per Farm in 1992	Average Acres per Farm in 2007
Eau Claire County	214	168
Clark County	212	203
Jackson County	303	253
Monroe County	224	166
Wisconsin	228	194

Size Distribution of Farms

Table 15 shows the percentage of farms in each size category for each of the four affected counties, urban counties, rural counties, and all Wisconsin counties.[7] Proportionately, Eau Claire County has more farms that are between 50 and 500 acres in size compared to the averages for urban counties and proportionately more farms that are between 50 and 180 acres in size compared to the averages for all Wisconsin counties. Clark County has proportionately more farms that are between 180 and 500 acres compared to the averages for rural counties and proportionately more farms that are between 50 and 500 acres compared to the averages for all Wisconsin counties. Jackson County has proportionately more farms that are larger than 50 acres in size compared to the averages for rural counties and for all Wisconsin counties. Monroe County has proportionately more farms that are between 50 and 180 acres in size compared to the averages for rural counties and for all Wisconsin counties.

[7] *2007 Census of Agriculture*, U.S. Department of Agriculture, Wisconsin Agricultural Statistics, 2009.

Table 15
Percent of Farms per Size Category, 2007

Counties	0 to 49 Acres	50 to 179 Acres	180 to 500 Acres	More than 500 Acres
Eau Claire County	28.6%	45.2%	21.8%	4.4%
Urban Counties	41.0%	33.0%	18.4%	7.6%
Clark County	19.7%	39.5%	34.5%	6.3%
Jackson County	21.6%	42.5%	24.8%	11.1%
Monroe County	27.7%	44.5%	22.6%	5.2%
Rural Counties	28.1%	39.8%	24.3%	7.8%
All Counties	31.6%	37.9%	22.7%	7.8%

Property Taxes and Values

Table 16 lists the average property tax, assessed value,[8] and sale price[9] per acre of agricultural land in each of the four counties affected by the project, urban counties, rural counties, and all Wisconsin counties. The assessed values and property taxes are based on the "use value" of agricultural land. Wisconsin Statutes define agricultural land as "land, exclusive of buildings and improvements, that is devoted primarily to agricultural use." Clark County has the highest average tax per acre on farmland and the highest assessed value per acre of farmland of all of the four counties affected by the proposed project. However, Eau Claire County has the highest average sale price per acre of farmland compared to the other counties affected by the project.

Table 16
Farmland Taxes and Values

	2010/11 Dollars per Acre of Farmland		
	Average Tax	Assessed Value	Sale Value
Eau Claire County	$2.71	$165	$4,250
Urban Counties	3.76	221	5,901

[8] Wisconsin Department of Revenue, Division of Research and Policy, Sales and Property Tax Policy Team.

[9] *Wisconsin 2011 Agricultural Statistics*, Wisconsin Agricultural Statistics Service, National Agricultural Statistics Service USDA, Wisconsin Department of Agriculture, Trade and Consumer Protection, 2011, pp. 10 and 11.

	2010/11 Dollars per Acre of Farmland		
	Average Tax	Assessed Value	Sale Value
Clark County	3.36	175	2,721
Jackson County	3.05	151	3,119
Monroe County	2.68	129	3,479
Rural Counties	3.22	178	3,407
All Counties	3.38	188	4,028

General Soils Description

In general, as the alternative routes for the proposed pipeline pass from north to south, the soils encountered alternate between coarse-textured with high permeability and medium coarse-textured with high to medium permeability. There is one location where a route passes through fine-textured soils with low permeability; that is the beginning few miles of the Augusta distribution segment, which starts further west of the two mainline routes.

Prime farmland is "land best suited for producing food, feed, forage, fiber, and oilseed crops, and also available for these uses. The land currently could be cropland, pasture land, range land, forest land, or other land but not urban built-up land or water. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed, including water management, according to modern farming methods. The criteria for identification of prime farmlands are entirely related to soil characteristics and other physical criteria." (USDA, NRC) Non-prime soils have limitations in terms of agricultural production and may be more susceptible to damage from pipeline construction.

Approximately 42 percent of the original Route A and 41 percent of the original Route B crosses farmland. DATCP's analysis of the soil classifications of the farmland that would be affected by the proposed project is summarized in the following table.

Table 17
Acres of Soil Classification for Affected Farmland

Soils Classification	Original Route A Acres	Original Route B Acres	Associated Facilities Acres
Prime Farmland	150.90	162.87	2.96
Farmland of statewide importance	69.23	63.92	2.69

Soils Classification	Original Route A Acres	Original Route B Acres	Associated Facilities Acres
Not prime farmland	72.36	53.42	17.04
Prime farmland if drained	25.16	26.34	60.92
Prime farmland if drained & protected from flooding	2.58	4.74	0.00
Total:	320.23	311.29	83.6

In Clark County the beginning of the Viking-Fairchild Route B.1 passes through the Fairchild-Elm Lake-Ludington soil association and a 3-mile segment of the Fairchild BRF Route A.2 in the southwest part of the county passes through the Boone-Elevasil-Tarr soil association. The Fairchild-Elm Lake-Ludington soil association consists of moderately deep, nearly level to moderately steep, poorly drained to moderately well drained, sandy and mucky soils on pediments. None of the three major soils in this association are classified as prime farmland. The Boone-Elevasil-Tarr soil association has moderately deep to very deep, nearly level to very steep, well drained to excessively drained, sandy and loamy soils. They are found on pediments, hills, and stream terraces. None of the major soils in this association are classified as prime farmland.

The portions of the alternative routes that pass through Eau Claire County pass primarily through the Ludington-Elm Lake-Fairchild soil association. This association consists of well drained to poorly drained, loamy sands that are underlain by loamy sand, sand, loam, and sandstone or sandstone and shale. They are found on uplands. Where the slopes of the Fairchild soils are 6 percent or less, they are classified as prime farmland. All of the routes also pass through significant amounts of the Menahga-Plainfield soil association. This association has excessively drained sandy and loamy sands that are underlain by loamy sand and sand. This association is found on stream terraces. None of the major soils in this association are classified as prime farmland.

Both of the alternative routes pass through Jackson County. In the northern part of the county, they pass mostly through the Bilson-Elevasil-Merit soil association and through significant amounts of the Seaton-Council soil association. In the southern part of the county, the routes mostly pass through the Tarr-Boone-Rockdam soil association as well as through significant amounts of the Ironrun-Ponycreek-Dawsil soil association. The Bilson-Elevasil-Merit soil association has moderately deep to very deep, nearly level to steep, well drained, loamy and silty soils. It is found on stream terraces, pediments, and uplands. Where

the slopes are 6 percent or less, the Bilson and Merit soils are classified as prime farmland. The Seaton-Council soil association consists of very deep, gently sloping to steep, well drained, silty and loamy soils on uplands. Seaton soils are classified as prime farmland where their slopes are 6 percent or less. The Tarr-Boone-Rockdam soil association consists of moderately deep to very deep, nearly level to very steep, excessively drained to moderately well drained, sandy soils. They are found on uplands, pediments, and stream terraces. None of the major soils in this association are classified as prime farmland. The Ironrun-Ponycreek-Dawsil soil association includes very deep, nearly level to gently sloping, somewhat poorly drained to very poorly drained, sandy, mucky, and peaty soils. They are found on stream terraces and pediments. None of the major soils in this association are classified as prime farmland.

From north to south in Monroe County, the alternative routes mostly pass through the Tarr-Boone-Impact, the Norden-Urne-La Farge, and the Billett-Impact soil associations. The Tarr-Boone-Impact soil association includes nearly level to very steep, excessively drained to moderately well drained, sandy soils on stream terraces and uplands. The Norden-Urne-La Farge soil association consists of gently sloping to very steep, well drained to somewhat excessively drained, silty and loamy soils; on uplands. The Billett-Impact soil association has nearly level to moderately steep, excessively drained to moderately well drained, loamy and sandy soils; on stream terraces and uplands. Where the slopes of the Billett soils are 6 percent or less, they are classified as prime farmland. None of the other major soils in these three associations are classified as prime farmland.

The following tables summarize the types of farmland that would be affected by each route.

Table 18
Types of Farmland Affected by the Original Route A

Land Use Class	Total Acres
Cropland	277.5
Farmed Wetland	7.7
Old Field	9.7
Pasture	17.8
Specialty Agriculture	7.5
TOTAL	320.2

Table 19
Types of Farmland affected by the Original Route B

Land Use Class	Total Acres
Cropland	262.6
Farmed Wetland	8.6
Old Field	13.1
Pasture	21.9
Specialty Agriculture	5.1
TOTAL	311.3

Table 20
Types of Farmland affected by the Associated Facilities

Land Use Class	Total Acres
Cropland	62.8
Farmed Wetland	8.7
Old Field	1.7
Pasture	0.0
Specialty Agriculture	10.4
TOTAL	83.6

Farmland Preservation

The Monroe County Farmland Preservation Plan was certified in 1982; the Eau Claire County Farmland Preservation Plan was certified in 1983; and the Clark and Jackson County Farmland Preservation Plans were certified in 1986. The plans identify farmland preservation areas in the counties and provide tax credit eligibility to farmers who wish to participate in the Farmland Preservation program.

The state of Wisconsin is transitioning from the old Farmland Preservation Program to the Working Lands Initiative that was included in the 2009/2011 state budget. As part of the transition, all 70 counties with Farmland Preservation Plans must update those plans within the next few years. The new initiative increases tax credits for farmland owners whose land is in the program.

None of the towns that could be affected by the proposed project have exclusive agricultural zoning. Under the Working Lands Initiative, landowners can receive $7.50 per acre in tax credits on land zoned for exclusive agricultural use. Farmland owners in towns without an exclusive agriculture zoning ordinance can participate in the program if they have an agreement signed before July 1, 2009 or if their land is included in an Agricultural Enterprise Area. Currently, neither of the routes for the proposed project passes through any Agricultural Enterprise Areas.

V. LANDOWNER COMMENTS

DATCP contacted a sample of the farmland owners whose land could be affected by the proposed project. Their level of concern about the project ranged from none to strongly opposed to it. In general their concerns included potential damage to soil, disruption of farming operations during pipeline construction, and the level of compensation for the easement. Several landowners commented that they would like to receive annual payments representing the amount of gas passing through the pipeline on their property rather than a one-time payment for the easement. This would be more like the payments landowners receive for having cell phone towers on their property. Some landowners also expressed interest in obtaining natural gas service. Where feasible, this would have to be negotiated with WG. Individual comments are summarized below.

Leone Arity's property would be affected by Route B. She rents her land out for crops and she indicated that she doesn't have any concerns about the project.

The Robert Boehm Revocable Trust property would be affected by either route. Some of this land is rented out and some is in the Conservation Reserve program. Mr. Boehm indicated that he has no concerns about the project.

Claire Bahnub's property would be affected by Route B. He indicated that there is tiling in one of his small fields that might be affected by the project.

Pascal D'Huyvetter's property would be affected by Route B. He operates an organic dairy and grows organic and high-value crops. Mr. D'Huyvetter is very concerned that the steel pipeline with cathodes will cause stray voltage that will affect his livestock. He also indicated that the pipeline may affect grassed waterways, fencing, and a center-pivot irrigation system on his farm. He would prefer that the project follow Route A further east of his property if it must be built.

William Divyak' property would be affected by either route. He raises beef cattle and uses the crops he grows to feed those cattle. He is very concerned about the potential impacts of Route B on his farm because it would cut through the middle of his pasture. Construction of the pipeline could interfere with his pasturing schedule. He also indicated that his cropland that would be affected by the project has a subsoil layer of clay over the sandy parent material. This subsoil layer adds to the productivity of these soils and allows him to produce 200+ bushels of corn per acre. He is very concerned that if these soil layers are mixed or not replaced in the correct order after the pipe has been laid, the productivity of the affected land will be irreparably damaged. He is also very concerned about the risk of potential explosions that the pipeline poses to anyone living near it. He would prefer to see the pipeline follow the existing Interstate Highway corridor that is also used by an electric transmission line. He is concerned that the project would limit the future use of this property, like where new farm buildings or houses might be built. If one of the proposed routes must be used, Mr. Divyak would prefer that it follow Route A.

Terry Lamb's property would be affected by either route. Mr. Lamb indicated that either route would pass through the middle of fields. Construction of the project will disrupt crop production and could interfere with fieldwork on adjacent land depending on when construction occurs. He grows corn, soybeans, and alfalfa hay. There are at least four waterways on this land that could be affected by the project. Mr. Lamb is concerned that pipeline construction might lead to erosion on his land. He is also concerned about the potential loss of income because of construction disrupting crop production and because of the damage that construction could do to his soils. Many of the soils on the Lamb property could benefit from the triple lift process during pipeline construction. He owns buildings on both sides of County Highway M and he is concerned about the safety of people living and working near the pipeline, and the limitations on constructing new buildings near the pipeline.

Donald Hall's property would be affected by Route A. Mr. Hall is most concerned about the project's potential impacts on his Conservation Stewardship program obligations. NRCS describes this program as encouraging agricultural and forest producers to undertake additional conservation activities and improve, maintain, and manage existing conservation activities. There is no livestock on the land that would be affected by the project.

Doris Hollingshead's property would be affected by either route. She did not identify any concerns about the proposed project, but she is not certain if the project will be beneficial. There are beef cattle and horses on this property.

Dale Kubaskie's property would be affected by either route. He indicated that he doesn't have any concerns about the project other than making sure that the affected soils are restored properly.

Timothy Liddne's property would be affected by either route. He did not identify any concerns about the project other than the need to restore the soils correctly. He has cattle on this land and the project may affect one grassed waterway.

The Matalas Family Trust property would be affected by Route B. Tamie Matalas did not identify any concerns about the project. The affected land is rented out for corn and hay production.

Judy Mitchell's property would be affected by Route B. She did not identify any concerns about the proposed project. She rents her land out for corn and soybeans.

The Northern Christmas Tree Growers' property would be affected by either route. The representative indicated that the proposed project would affect Christmas tree production and cropland used for corn and soybeans. One grassed waterway may also be affected. His primary concerns about the project include proper restoration of the soil layers and proper de-compaction of any compacted soils. He also wants to make sure that the acquired easement is only for this pipeline project, not for future additions of other pipelines or other utilities or fiber optics, which would be expensive to fix if accidentally damaged during normal farming activities.

Wilfred Olson's property would be affected by Route A. Mr. Olson indicated that he does not have any concerns about the project. Corn is grown on the affected land. He would like to be able to get natural gas service from the new line.

Carol Prindle's property would be affected by either route. She had no comment about the proposed project.

Ralph Prindle's property would be affected by Route B. His son Dean did not identify any concerns about the project as long as the soils are restored correctly. He also said that they grow corn, soybeans, and hay on the affected land and there is no livestock on that land.

Mr. and Mrs. Don Rudebecks' property would be affected by Route A. Mrs. Rudebeck indicated that they have been very well informed by WG about the project. She did not identify any concerns about the project. They raise steers and they grow corn, soybeans, and

hay.

Alyce Schreiber's property would be affected by Route B. She indicated that the project would run along the edge of a field and she did not identify any concerns about the impacts on that cropland. However, it may also cross her front yard

James Prindle's property would be affected by either route. H indicated that at this time he doesn't have enough information about the project to know the extent of the impacts it could have on his farmland. He does have waterways and irrigation that could be affected by it. If possible, he would like to be able to have natural gas service for his corn driers.

The Selz Farms, Inc. property would be affected by Route A. Pam Selz indicated that she grows corn and alfalfa on the affected land and that there is no livestock on the affected land. The only concern she identified was that in the future, the project might interfere with the installation of tiling.

David and Julie Rissers' property would be affected by either route. Mr. Risser indicated that there is pasture for dairy cattle where the project would cross the Rissers' property. The project could affect that pasture fencing. He did not identify any other concerns.

David and Amy Bakers' property would be affected by Route A. Amy Baker indicated that they raise grass-fed beef cattle and grow corn, soybeans, and hay. The proposed pipeline would pass through the middle of their pasture and would disrupt their grazing schedule. The project would also affect pasture fencing. Ms. Baker indicated that a previous installation of power line poles led to damage to their pasture fencing, which the electric company did not repair. She is concerned that similar problems could be caused by the pipeline company. She would prefer that the pipeline follow existing roads rather than cross through the middle of farmland.

VI. POTENTIAL ADVERSE IMPACTS OF PIPELINE CONSTRUCTION ON AGRICULTURAL PRODUCTIVITY

Many aspects of agricultural operations and productivity can be adversely affected by pipeline construction traversing fields. These include:

- the immediate direct interference with farm operations on the pipeline construction right-of-way and adjacent areas due to pipeline construction and construction of temporary access roads;
- soil erosion and runoff during construction;

- interruption of or damage to irrigation systems and surface and subsurface drainage systems, grazing, fencing, and row crops;
- flooding of fields due to re-channeling of water encountered in the trench in wet conditions and displacement of soil strata from the pipe, trench, and reconfigured soil profile;

Additional impacts that may have long-term effects on agricultural productivity in the pipeline right-of-way and adjacent fields include:

- topsoil inversion and mixing with subsoil and spoil material;
- subsoil erosion and mixing with spoil material;
- deep compaction of subsoil;
- ponding and drainage seeps from altered surface and subsurface drainage profiles;
- inadequate restoration leading to increased rock content, and surface contours of the right-of-way that do not match the original character;

Topsoil Mixing

Potential Adverse Impact
Good agricultural topsoil is an invaluable resource that aught to have priority in preservation. Mixing of topsoil with the underlying subsoil and/or parent material will reduce tilth, organic matter content and cation exchange capacity, and alter soil structure and distribution of particle sizes (particularly water stable aggregates). The mixing of soil layers can also increase the number of rocks found at the surface and increase the concentrations of harmful salts near the surface. Rocks larger than three inches can damage farm equipment and reduce soil productivity. Once mixed, full restoration would require transporting replacement topsoil of similar quality from an off-site location. This would be expensive. It makes more sense to prevent the destruction or mixing of the topsoil in the first place.

Methods are available that can preserve topsoil quality within pipeline rights-of-way. It is essential; however, that the proper protocols be observed to ensure the desired outcome is reached.

> "A carefully conceived program for the pipeline corridor is needed to mitigate and recover from the construction activities….The mitigation program developed to restore cropland productivity must anticipate the potential damages resulting from the interaction of climactic conditions and on-site soil and topographic characteristics with the pipeline construction activities….One must expect the worst possible

> situation during pipeline construction through agricultural lands and have a program in place to avoid and/or recover from very severe damage to the soil." (Memo from Leonard Massie, Agricultural Engineering Consultant, to Peter Nauth, of DATCP, January 5, 2000)

Topsoil mixing can occur even under dry conditions during the grading and re-grading of the pipeline right-of-way before and after construction, as well as during construction and backfilling of the trench. If the topographic profile horizontally across the right-of-way is over 6 inches, and the topsoil layer is less than 12 inches, significant long-term damage can occur to agricultural productivity even under dry conditions. To avoid this, stripping of topsoil to a depth of at least 12 inches is needed not just over the trench and spoil storage area, but across the entire right-of-way width. This includes the work and traffic area, and excludes only the area used to store the segregated topsoil.

An Agriculture Canada study of the impacts of pipeline construction found that "Chemical analysis of soil samples from the yield sites revealed considerable mixing of surface and subsurface soil layers both over the trench and in the work area." (p. 4) The study also showed lowered organic matter levels, total nitrogen and cation exchange capacity **over** both the trench and work area compared to adjacent undisturbed soils. This study was done under favorable [i.e. dry] weather conditions, and the study states "The generally favorable weather conditions meant that no deep ruts were formed during disturbance." (p. 71) (J.L.B. Culley, et al. (1981) Impacts of Installation of an Oil Pipeline on the Productivity of Ontario Cropland. Land Resource Research Institute. Research Branch. Agriculture Canada. Ottawa, Ontario.)

Even more serious mixing of topsoil is expected to occur under normal construction practices where wet soil conditions exist. "Pipeline contractors are not willing to wait for wet soils to dry down to a moisture level where the bearing capacity (ability to resist compaction) is restored. Many, and often long, delays would occur. Time is money, and delays are not tolerated – construction proceeds unabated except, perhaps, during a heavy downpour of rain." (Massie, op. cit., p. 2) In addition, it is questionable that soil in the construction corridor will dry out at all after major precipitation, because "the vegetation will be destroyed. The transpiration from plants is the principal pump to dry the soil. No plants, no pump, soil stays wet.
The moisture and precipitation pattern expected during construction must be taken into account in planning adequate mitigation measures to protect topsoil from mixing. In susceptible soils, even one inch of summer rainfall over five of ten days can cause ruts exceeding seven inches in depth under normal construction equipment traffic. (John Lacey,

Training Slide Series, Narrative, p. 8-9, 1998) A Union Gas study of the Dawn-Kerwood pipeline project noted, "Due to the constant movement of equipment along the traveled portion of the right-of-way, mixing of the topsoil and subsoil occurred up to a depth of 61 cm (24")."

Protocols to Avoid Topsoil Mixing/Inversion
The pipeline construction process for this project will apply "full corridor topsoil removal" on all agricultural lands, unless a landowner requests only "partial corridor topsoil removal". This is being done to prevent the possibility of topsoil mixing with subsoil during construction. With full corridor topsoil removal, the entire right-of-way, with the exception of the topsoil storage area on the edge of the working side of the trench, is stripped of topsoil to a depth of at least 12 inches which is then stored separately from the spoil material. This occurs prior to the operations of grading, construction, backfilling, de-compaction, and re-grading of subsoil.

In this way, work can be continued under wet conditions without damage to the topsoil. Rutting, inversion and compaction is then limited to the lower-fertility subsoil, which can be subsequently de-compacted during the restoration process following construction, after which the topsoil is replaced.

Under partial corridor topsoil removal, topsoil is stripped only from the portion of the right-of-way over the trench and spoil storage pile, not from the working storage and traffic areas. If a landowner selects partial corridor topsoil removal, a narrower width of temporary right-of-way would be required.

The Agricultural Inspector (AI) hired for the project will measure topsoil depth on agricultural lands affected by the project prior to the start of construction in order to establish baseline values. The AI will adjust the frequency of sampling based on the topography and soil type identified in the soil survey. During the post-construction restoration process, testing for depth of topsoil can be done again where necessary and compared to the baseline to ensure uniformity of depth across the right-of-way to a level comparable to what was present before construction. This is done after the topsoil is replaced following de-compaction, removal of rocks, and tile repair. These protocols are discussed further in Section 10.b of the Wisconsin Gas LLC, Agricultural Mitigation Plan (AMP), West Central Lateral. Refer to the Appendix for the text of the AMP.

Hixton loam, Kato silt loam, Kert loam, Markey muck Maplehurst silt loam, Veedum silt loam, and Vesper loam have topsoil layers that can exceed 12 inches in depth. All the other

soils have topsoil depths of 12 inches or less. The potential for topsoil mixing to occur on the working right-of-way is significant, if the topsoil is not stripped from the entire right-of-way.

Fertile Subsoil Mixing with Underlying Parent Material

Potential Adverse Impact
As was the case with mixing topsoil and subsoil, long-term crop productivity loss may also result from mixing glacial till or outwash, or sandy soil, with the subsoil layer, which is often of relatively high quality in many parts of Wisconsin.
Given the soils in some of the proposed project corridor, there is the potential for long-term damage to crop productivity that may result from mixing the highly fertile clay or silt subsoil with a very different unproductive layer of glacial till, outwash or sand that underlies it. As stated by DATCP in its official comments to FERC for a similar project, dated Aug. 28, 2000, "The greatest hazard to Wisconsin cropland, specifically mineral soils along the pipeline route, is the bringing of glacial till to the surface during the trenching process."

According to agricultural engineering consultant Dr. Leonard Massie, failing to apply the triple-lift soil segregation method when the soil profile calls for it could result in up to a 30 percent yield loss immediately after construction. (Meeting Minutes, June 23, 2003 between DATCP and ANR personnel) Some agricultural land in the pipeline right-of-way has a gravel, bedrock or sand substratum. Yet excavation for pipeline construction will go down over six feet, into the glacial till or outwash. Just as mixing of this gravelly or otherwise inappropriate material with topsoil must be avoided, its mixing with silty subsoil could also have long-term adverse effects on productivity.

Why Subsoil Quality is Important to Crop Yields
Some pipeline consultants have relied primarily on water-holding capacity differences as an indicator of triple-lift soil candidacy. However, despite the essential role of water availability, the important contribution of subsoil layer quality to crop yield also needs to be recognized. Crop yields depend on factors other than just soil water-holding capacity. The root zone is increasingly recognized for its contributing role in supplying carbon and other nutrients essential for plant growth. The availability of a deep, fertile crop root zone becomes increasingly important as the depth and frequency of droughts increase with climate change. The work of USDA soil scientist Cynthia Cambardella at the Soil Tilth Lab in Ames, Iowa is highly relevant:

> "… it can take decades to change the organic matter in soils. For the last 10 years, she [Cynthia Cambardella] has looked at the contribution of roots to organic matter on the hunch that farmers and researchers were overplaying the contribution of soil-surface plant residue to soil-organic-matter levels. That hunch has proven correct. Plant roots play a much bigger role in total soil organic matter than originally suspected, she said. In a one-year study of oat production, Cambardella learned 75 percent of new carbon in the soil came from the plant roots, while only 25 percent came from crop residue…. Cambardella applied her theory to a 30-year University of Minnesota corn-silage study. She found corn-silage roots contributed similar levels of new carbon in the soil as in her oat study." (Jane Metcalf, "Organic Matter at the Heart of Soils", Wisc. State Farmer, June 23, 2000)

According to a UW-Extension publication,

> "Nutrients present in the subsoil can contribute significantly to the nutrition of crops. Roots that reach down into the subsoil can use the nutrients stored there, so the level of phosphorus and potassium present in the plow layer becomes slightly less important. For example, recent research at Arlington showed that alfalfa obtained about 100 lb. of potash (k2O equivalent) per year from the subsoil." (K.A. Kelling, L.G. Bundy, et al., Optimum Soil Test Levels For Wisconsin. 1999. Publication A3030)

Mixing of poor-quality gravelly material with high-quality subsoil can also present an obstruction to root elongation and development.

> "Subsoil properties, such as coarse sand and gravel, shallow depth to bedrock, high soil densities and clay content in excess of 42 percent can limit root elongation and development. Therefore, total rooting depth has a direct impact on yield…. Soil fertility is vital to a productive soil, but a fertile soil is not necessarily a productive soil. …The addition of animal manure and fertilizers can supply needed crop nutrients and help offset losses in soil fertility caused by erosion. But the productivity of eroded soils can only be restored by added inputs if favorable subsoil material is present. Productivity lost by excessive soil erosion cannot be restored through additional nutrient inputs for soils with subsoil material that has unfavorable properties for plant root growth. And in soils with fragile subsoils, limited rooting depth, coarse sand and gravel, or high densities, there is little or no ability to recover yield losses with increased inputs…." (Iowa State University Extension. Water Watch Newsletter. Issue 91, April 2001)

There has been an increasing recognition over time of the role of plant roots in plant growth, and hence of the importance of the root zone and the subsoil where it resides:

> "During the last seven years, plant water relation concepts have changed, and roots rather than shoots are considered to regulate plant growth and development in drying soil. Kramer (1988) reported that 50 years of progress in our understanding of plant water relations were lost by shifting emphasis away from the soil to the shoots of the plant. Recent evidence suggests that root signals influence stomatal behavior, leaf initiation, leaf expansion, and other development processes. (Davies and Zhang, 1991)….Roots absorb water and nutrients simultaneously from deep and shallow soil horizons and from moist and partially dry soil….Roots are believed to be the primary source for growth regulators such as cytokine, gibberellin, abscisic acid, and ethylene…. A shallow root system with a high root density in the surface soil can result in rapid depletion of available water and nutrients, while a deep root system can make available a large volume of soil for root extraction of water and nutrients." (G. S. Brar and Charles M. Reynolds, Soil Physical Environment and Root Growth in Northern Climates. U.S. Army Corps. of Engineers. Special Report 96-13. May 1996; See also P. J. Kramer (1988) "Changing Concepts Regarding Plant Water Relations. Plant Cell Environment, Vol. 11: 565-568; W. J. Davies and J. Zhang (1991) "Root Signals and the Regulation of Growth and Development of Plants in Drying Soil." Annual Review of Plant Physiology and Plant Molecular Biology. Vol. 42: 55-76)
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> "When present in sufficiently high concentrations in soil, many elements can adversely affect root growth. Aluminum (Al), manganese (Mn), and hydrogen (H) often have a pronounced effect on root growth of agricultural crops. … At low pH, Al, Mn, other toxic metals come into solution and hinder root growth…. Soluble Al in subsoils can be a challenge, since lime cannot be used to correct the problem…. For many crop species, it is not clear which fraction of the plant's entire root system is active in nutrient absorption. In general, absorption and translocation of N, P and potassium (K) occur in all parts of the root system, whereas calcium (Ca) tends to be absorbed in areas near root tips. Studies with winter wheat suggest that N and K uptake rates vary considerably among the seminal and nodal roots on the same plant. There also is evidence that some species have five or more types of roots, each with distinct developmental and physiological characteristics….In soils that frequently experience periods of drought, deep placement of fertilizer may be most effective." (Dr. J.L. Kovar. "The Role of Roots in Maximum Soil Productivity." Fertilizer Technology. Bulletin No. 33P18-21.)

> "Due to the difficulty and cost of ameliorating subsoil acidity, minimizing or preventing subsoil acidification should receive more attention." (C. Tang, Causes and Management of Subsoil Acidity)

WG has provided DATCP with data that includes a detailed profile of soils along the corridor that would enable construction staff to identify the parcels where subsoil would be put at significant risk from mixing with the parent materials. DATCP reviewed this soils data based on soil surveys for counties along the route, using the decision criteria. In-field evaluation will be necessary to confirm the appropriateness of applying this technique to specific soils.

Mitigation of Mixing of Fertile Subsoil with Underlying Parent Material
To avoid mixing the fertile subsoil with underlying gravelly material in such areas, three separate storage piles are required: one for the topsoil to a depth of 12 inches; a second for the subsoil to its depth of up about to 2 or 3 feet; and a third for the underlying parent material. This technique, often called "triple trenching", will here be referred to as the "triple-lift" method. It would be the preferred approach in areas with a gravelly material under a highly fertile subsoil layer. Please note that not all soils benefit from the method. In order for this method to be of value, there must be a significant difference between the upper subsoil layer and the lower subsoil layer or parent material.

On past projects, DATCP focused specifically on the gravel content of the Lower "B" soil layer of the subsoil, or the parent material (C soil layer). However, the presence of parent material, consisting of sand without gravel, may also flag the need for three separate storage piles. The triple-lift method could entail establishing a wider right-of-way than otherwise necessary to allow space for the third segregated storage area. It is possible that the additional right-of-way width may not be needed on this project to accommodate triple-lift soil segregation method. On the Guardian project, the basic 125-foot right-of-way allocated for the 36-inch diameter pipe laid with a 4-foot depth of cover proved to be enough to accommodate both full corridor stripping of topsoil and the triple-lift method to prevent subsoil mixing with parent material.

The triple-pile method was also mandated, where appropriate, in the PSCW order of July 25, 2001 for the Wisconsin Gas Lateral pipeline project through Jefferson and Waukesha Counties. In this case, after the top 12 inches of topsoil was removed and segregated, a second subsoil pile, to a depth of 24 to 30 inches, was to be segregated in designated areas. The areas so designated for use of the triple-lift method were those where the subsoil layer was at least 6 to 12 inches thick and consisted of loam, sandy loam, silt loam, or finer

textures, and where the layers beneath contained at least 35 percent gravel by volume. Tracts to which the triple-lift method applied on this project included those where these criteria were met on 40 percent or more of the tract. Exceptions were also allowed for tracts with less than 40 percent of soils meeting the criteria, depending on the total amount of agricultural land within the tract.

Gravels are defined as soils greater than 0.1 inch in diameter. This is approximately equivalent to those soil units, which don't pass a #4 sieve (4.76 mm = .18 in) for which data is available by soil map unit in the county soil surveys for the project area in Wisconsin.

According to Table 15, p. 51 of the WG Application to the PSC for the project (March 27, 2013), Route A would require 40 miles of 16-inch pipe, 33.3 miles of 12-inch pipe, 2 miles of 8-inch pipe, 7.3 miles of 6-inch pipe and 3.9 miles of 4-inch pipe; Route B would require 45 miles of 16-inch pipe, 29.5 miles of 12-inch pipe, 2 miles of 8-inch pipe, 9.8 miles of 6-inch pipe, and 3 miles of 4-inch pipe.

In the analysis which follows, we assume a depth to cover over the pipeline of 4 feet. Where a 16-inch pipe is being laid, the relevant depth of the trench required would then be at minimum 64 inches, while a 12-inch pipe would require a minimum trench depth of 60 inches, an 8-inch pipe would require a minimum depth of 56 inches, a 6-inch pipe would require a minimum trench depth of 54 inches, and a 4-inch pipe would need only a minimum depth of 52 inches. In all cases then, even for the 4-inch diameter pipe segments, the excavation would extend deep into the layers of parent material, so that potential mixing of fertile subsoil with gravelly, sandy or rocky parent material becomes an issue that bears examination. Here, we review soil map units along the route which indicate this potential problem is likely to be present.

Analysis of Soil Map Units Recommended for the Triple-Lift, Construction Method
In creating a detailed list of soil map units along the West Central Lateral Pipeline Project routes that are potential triple-lift candidates, the criteria for inclusion of soil map units was based on data in the soils surveys of Jackson, Monroe, Eau Claire and Clark counties. In particular, it should be noted that although a specific soil map unit might qualify in one county, the same soil map unit might not qualify in another county, due to differences in the depth, slope and quality of the soil profile.
Staff used the following criteria to determine candidate soils:

1. Is there a well-defined "B" layer or layers in the top 60 inches of the soil profile?

2. If the answer to 1. is "yes," then is there a significant qualitative difference between the entire "B" layer and the "C" layer beneath it, or between the upper portions of the "B" layer and some lower portion of the "B" layer and "C" layer?

3. If the answer to 2. is "yes," then is the significant difference measured/observed in 2. such that the "B" layer or upper portions of the "B" layer is of significantly superior quality to the layers beneath? Examples of a significant superior qualitative difference between layers includes silt loams, silty clay loams, clay loams and loams above : a) gravel and/or sand; b) glacial till/ outwash; c) bedrock; d) other soils which contain a significant percentage of stones, cobbles and gravel, including dolomite fragments as determined by the percent of soils passing a No. 4 and/or No. 10 sieve test, supplemented by text descriptions of soil character in the soil survey description of the soil map unit layers where appropriate.

4. If the answer to 3. is "yes," then is the relative thickness of the poorer quality "C" and/or lower "B" layers large enough to result in "significant" degradation of the upper "B" layer if the layers are mixed? To be conservative, we assumed here that anything greater than a 1-foot thickness of the poorer quality underlying layers (down to the bottom of the trench) would constitute significant degradation of the upper "B" layers. WG has indicated that the trench for this project will be 6 feet (72 inches) deep. Since the soil surveys only go down to 60 inches, it is assumed that the additional material below the soil survey also consists of “C" material. Therefore, it is virtually assured that in all cases on this project, over 1 foot thickness of poorer underlying strata will exist and that mixing must be avoided in all cases where the answer to 3. is "yes." For the 12-inch, 8-inch, 6-inch, and 4-inch diameter pipes used on the lateral routes, therefore, it is possible that the same soil map unit that might require triple-lift on the mainline 16-inch diameter segment might be excluded from triple-lift candidate status for smaller diameter pipes because the relative "C" layer proportion of the affected trench depth would be significantly smaller. Table 21 is based on the assumption of a 16-inch diameter for the pipe being constructed.

5. If the answer to 3. and 4. are both "yes", then is the total thickness of the superior quality "B" layer less than or equal to 32 inches? It was assumed that if subsoil thickness was greater than two and one-half feet, then dilution was less likely to result in significant adverse effects.

6. If the answer to 5. is "yes," and the underlying inferior quality soil layers are not described in the text as either sand, glacial till or outwash, gravel, bedrock or some combination of these, then check the gravel content of the appropriate lower-quality layers ("C", or upper "B" and "C"). If the percent of the soils there **not passing** the #4 sieve test

(i.e. particles > 4.7 mm) is greater than 20% **and/or** the percent of the soils **not passing** the #10 sieve test (i.e. particles > 2.0 mm) is greater than 35% and/ or there is evidence of any stones larger than 3 inches in the "C" or lower "B" layers, then the soil map unit is a triple-lift candidate. Note that where the county soil survey indicates a range of gravel content (i.e. 0-35%) the upper figure in the range is controlling. Also, note that: a) If the text description of a soil's gravel, cobble or stone content differs from the gravel content in the Engineering Characteristics table, the higher gravel content or characteristic figure will be used; and b) Other soil characteristics may trigger a classification of a soil as a triple-lift candidate even in the absence of significant gravel content in the Engineering Table. These include reference in the text to "dolomite fragments"; "numerous cobblestones or pebbles"; "Shaly soils" and "sandy loam."

7. If a soil passes the first six tests above, but has a slope of 12% or more, exclude it from the list of triple-lift candidates.

8. If a soil passes the first six tests above, but is "poorly drained" or "very poorly drained," exclude it from the list of triple-lift candidates unless there is a drainage system on the site for that soil area. In practice, since staff has no evidence of whether drainage systems are present or not, poorly drained or very poorly drained soils have been excluded from the candidate list.

Summary of Soils Recommended for Triple-Lift Soil Treatment Based on Above Criteria
The data in Table 21 below summarizes the estimated type and amount of soils qualifying as candidates for the triple-lift soil separation procedure along the proposed West Central Lateral routes A and B based on the above criteria.

Please note that DATCP has included soils with bedrock at a depth above the bottom of the trench. Any bedrock material that is excavated from the trench should be hauled to an approved off-site disposal area. As with triple-lift soils, this bedrock material should not be mixed with any topsoil or subsoil because it would reduce the productivity of these soils.

Generally, DATCP has relied on the threshold that 40% or more of the length of right-of-way for a parcel must consist of qualifying soils to be considered as a candidate for the triple-lift method, except for exceptions determined in the field by the Environmental Inspector in consultation with the Agricultural Inspector. However, we would recommend that this threshold be relaxed down to 25% for larger affected agricultural parcels.

Table 21
Potential Soil Map Unit Candidates for Triple-Lift Method

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
1234B (BnB) – Jackson (Routes A & B & Associated Facilities)	Bilson-Silverhill Sandy Loam, 1-6% slope, well drained, prime farmland	0-9, sandy loam	9-28, sandy loam, loam	0%> 4.7 mm @ 8-32”; 20%> @ 32” (Silverhill only - making up 30-40% of the complex.)	0% > 2 mm @ 8-32”; 25% > 2 mm @ 32” (Silverhill only – making up 30-40% of the complex.)	Sand @ 32” in both Bilson and Silverhill soils; Bedrock @ 50” in Silverhill soils.
1234C2 (BnC2) - Jackson (Routes A & B)	Bilson-Elevasil Sandy Loam, 6-12 % slope, well drained, farmland of statewide importance	0-9	9-28, sandy loam	N/A	25% >2 mm @3-27”; 50% > 2 mm @ 27-39”	Weakly cemented sandstone at 39” in Elavasil soils; intricately mixed with Bilson soils
1266B (HkB) – Jackson (Routes A &	Hiles-Kert Silt Loam, 0-6%, moderately well	0-12, silt loam	12-28/41, Silt	N/A	N/A	Sandstone and shale @ 41”

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
B & Associated Facilities)	drained, prime if drained		loam over clay loam			
1269A (Vs) – Jackson (Routes A & B & Associated Facilities)	Veedum-Elm Lake Mucks, 0-2%, poorly drained, not prime (**)	0-11, muck over silt loam	11-31, loam and firm, silty clay loam	5%> 4.7 mm @ 7-21”; 20%> @21-31”	5%> 4.7 mm @ 7-21”; 25%> @21-31	Cemented sandstone & shale @ 31” to 38”
1519A (Pv) – Jackson (Associated Facilities)	Ponycreek-Dawsil Complex, 0-2%, very poorly drained, not prime (**) (##), (++), farmable if drained	0-8, Muck over mucky sand (Ponycreek); 0-20, Mucky peat (Dawsil)	8-21, sand (Ponycreek); 20-40 is muck (Dawsil only) (++)	N/A for Ponycreek but is 0% > 4.7 mm @ 0-40” and 55% > 4.7 mm @ 40” for Dawsil	N/A for Ponycreek but is 0% > 2 mm @0-40” and 65%> 2 mm @ 40” for Dawsil	Dawsil only – sand @ 40” (++)
1424B (MoB) –	Merit-Gardenvale Silt Loam, 1-6%,	0-9, silt loam	9-30, silt loam	N/A	N/A	Sand @ 30”

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
Jackson (Routes A & B)	well drained, prime farmland		over loam, sandy loam & sandy clay loam			
1740C2 (CpC2) – Jackson (Route B)	Council-Bilson Fine Sandy Loam, 6-12%, Well drained, farmland of statewide importance (+)	0-9, fine sandy loam	9-41, for Council soil (40-50%), and 9-31 for Bilson soils (35-45%); Council is fine sandy loam over loam and	N/A	N/A	Sand @ 31" in Bilson soils; Council soil parent material is silt loam and loam (+)

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
			sandy loam; Bilson is fine sandy loam over loamy sand			
213B2 (HnB2) – Jackson (Route B)	Hixton Silt Loam, 2-6 %, Moderately eroded, well drained, prime farmland	0-9, loam	9-32, loam and sandy loam	30%> 4.7 mm @9-32”; 45%> @ 32-39”	35% >2 mm @ 9-32”; 50% > @32-39”	Weathered bedrock @39”
213C2 (HnC2) – Jackson (Routes A & B)	Hixton Silt Loam, 6-12 %, Moderately eroded, well drained, farmland of statewide importance	0-9, loam	9-32, loam and sandy loam	30%> 4.7 mm @9-32”; 45%> @ 32-39”	35% >2 mm @ 9-32”; 50% > @32-39”	Weathered bedrock @39”
224B (ElB) – Jackson (Routes A &	Elevasil Sandy Loam, 0-6 %, well drained, prime	0-8, sandy loam	8-30, sandy loam	N/A	25%> 2 mm @ 3-27”; 50%>	Sandstone @ 39”

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
B & Associated Facilities)	farmland		over loam		@ 27-39”	
224C2 (ElC2) – Jackson (Routes A & B)	Elevasil Sandy Loam, 6-12 % moderately eroded, well drained, farmland of statewide importance	0-8, sandy loam	8-30, sandy loam over loam	N/A	25%> 2 mm @ 3-27”; 50%> @ 27-39”	Sandstone @ 39”
268A (KeA) - Jackson (Route B & Associated Facilities)	Kert Silt Loam, 0-3 %, Somewhat poorly drained, prime farmland if drained (**)	0-9	9-32	5%> 4.7 mm @9-1”; 20%> @ 19-31”	5%> 4.7 mm @ 9-19”; 25%> 2 mm @ 19-31”	Shale and sandstone @32”
286B (HuB) – Jackson (Routes A & B & Associated Facilities)	Humbird Fine Sandy Loam, 1-6 %, moderately well drained, farmland of statewide importance	0-12, fine sandy loam	12-34, sandy loam, clay loam, over firm, silty clay	N/A	N/A	Cemented shale and sandstone @ 34”

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
288A (MpA) – Jackson (Routes A & B & Associated Facilities)	Merrillan Fine Sandy Loam, 0-3%, Somewhat poorly drained, farmland of statewide importance (**)	0-5, mucky peat over fine sandy loam	6-30, sandy loam over firm, silty clay	N/A	N/A	Cemented sandstone & shale & 34”
424B (MnB) – Jackson (Routes A & B)	Merit Silt Loam, 1-6%, well drained, prime farmland	0-9, silt loam	9-21, silt loam over loam	N/A	N/A	Sand @ 30”
434B (BlB) – Jackson (Routes A & B)	Bilson Sandy Loam, 1-6%, well drained, prime farmland	0-8, sandy loam	8-32, sandy loam over loam	N/A	N/A	Sand @ 32
446A (MmA) – Jackson (Routes A & B)	Merimod Silt Loam, 0-3%, moderately well drained, prime farmland	0-9, silt loam	9-32, silt loam over sandy loam	N/A	N/A	Sand @ 32”
448A (SoA) – Jackson (Routes A &	Sooner Silt Loam, 0-3%, somewhat poorly drained,	0-9, silt loam	9-31, silt loam over	N/A	N/A	Sand and coarse sand @ 31”

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
B)	prime when drained		loam			
456A (BkA) – Jackson (Routes A & B & Associated Facilities)	Bilmod Sandy Loam, 0-3%, moderately well drained, prime farmland	0-9, sandy loam	9-32, sandy loam over loam, over loamy sand	5%> 4.7 mm @ 9-24”; 20%> @25”	5%> 4.7 mm @ 9-24”; 25%> @25”	Sand @ 32”
458A (HpA) – Jackson (Routes A & B)	Hoop Sandy Loam, 0-3%, somewhat poorly drained, prime farmland when d rained	0-11, sandy loam	11-24, sandy loam	N/A	N/A	Sand and coarse sand @ 24”
AtB – Eau Claire (Routes A & B)	Arland Sandy Loam, 2-6%, well drained, prime farmland	0-13, sandy loam	13-34, sandy loam over loamy sand	N/A	N/A	Weakly cemented sandstone @40”
AtC2 – Eau Claire	Arland Sandy Loam, 6-12%	0-13, sandy	13-34, sandy	N/A	N/A	Weakly cemented

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
(Routes A & B)	eroded, well drained, farmland of statewide importance	loam	loam over loamy sand			sandstone @40”
BlA – Monroe (Route B)	Billett Sandy Loam, 0-2%, well drained, prime farmland	0-9, sandy loam	9-32, sandy loam over loamy sand	0-5% > 4.7 mm @9-32”; 75%> @ 32-60	5-20%> 2 mm @ 9-32”; 80% > @ 32-60	Gravelly sand @ 32”
BlB – Monroe (Routes A & B)	Billett Sandy Loam, 2-6%, well drained, prime farmland	0-9, sandy loam	9-32, sandy loam over loamy sand	0-5% > 4.7 mm @9-32”; 75%> @ 32-60	5-20%> 2 mm @ 9-32”; 80% > @ 32-60	Gravelly sand @ 32”
BlC – Monroe (Routes A & B)	Billett Sandy Loam, 6-12%, well drained, farmland of statewide importance	0-9, sandy loam	9-32, sandy loam over loamy sand	0-5% > 4.7 mm @9-32”; 75%> @ 32-60	5-20%> 2 mm @ 9-32”; 80% > @ 32-60	Gravelly sand @ 32”
BmA – Monroe	Billett Sandy Loam, 0-3%,	0-8, sandy	8-36, sandy	N/A	N/A	Sand @ 36”

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
(Routes A & B)	moderately well drained, prime farmland	loam	loam over loamy sand			
Dc – Monroe (Route B)	Dawson Peat, very poorly drained, farmable if drained (**)	0-12, fibric material	12-42, sapric material	N/A	N/A	Sand @ 42”
DdA – Monroe (Route B)	Dells Silt Loam, 0-3%	0-9	9-33	N/A	N/A	Sand @ 33”
ElC – Monroe (Routes A & B)	Eleva Sandy Loam, 6-12%, well drained, farmland of statewide importance	0-9, sandy loam	9-28, loam over sandy loam	N/A	N/A	Weakly consolidate sandstone @ 37”; sand @ 28-37”
GaC – Monroe (Routes A & B)	Gale Silt Loam, 6-12%, well-drained, farmland of statewide importance	0-7, silt loam	7-26, silt loam over clay loam	0%> 4.7 mm @ 7-33”; 15%> @33-39”		Sandstone @ 38”; loam y sand & sand @ 33-38”
HeC2 – Eau Claire (Route	Hiles Silt Loam, 6-12%, eroded;	0-8, silt loam	8-27, silt loam	N/A	N/A	Sandstone stratified

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
A)	moderately well drained, farmland of statewide importance		over firm, silty clay loam			with clay shale @ 27”
HkB – Eau Claire (Routes A & B)	Hiles-Kert Soils, 2-6 %, moderately well drained, prime farmland	0-8, silt loam	8-27, silt loam over firm silty clay loam	N/A	N/A	Sandstone stratified with clay shale @ 27”
HnB – Eau Claire (Routes A & B)	Hixton Loam, 2-6%, well drained, prime farmland	0-16, loam	16-27, loam over sandy loam	N/A	N/A	Sandstone @ 36”; Sand @ 27-36”
HpA – Monroe (Route B)	Hoopeston Sandy Loam, 0-3%, somewhat poorly drained, prime farmland (**) (++)	0-10, sandy loam	10-24, sandy loam over loamy sand			Sand @ 24”
JaA –	Jackson Silt Loam,	0-9, silt	9-44, silt	0% > 4.7	0% > 4.7	Sand @ 44”

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
Monroe (Routes A & B)	0-2%, moderately well drained, prime farmland	loam	loam, silty clay loam	mm @ 9-44”; 5%> @ 44”	mm @ 9-44”; 5%> @ 44”	
JaB – Monroe (Routes A & B & Associated Facilities)	Jackson Silt Loam, 2-6%, moderately well drained, prime farmland	0-9, silt loam	9-44, silt loam, silty clay loam	0% > 4.7 mm @ 9-44”; 5%> @ 44”	0% > 4.7 mm @ 9-44”; 5%> @ 44”	Sand @ 44”
Ka – Monroe (Route B)	Kato Silt Loam, Very poorly drained, prime if drained (**)	0-14, silt loam	14—36, silty clay loam, silt loam	0%> 4.7 mm @ 14-36”; 25% > @ 36”	0% > 2 mm @ 14-36”; 30% >@36”	Coarse and Gravelly sand @ 36”
KeA – Eau Claire (Routes A & B & Associated Facilities)	Kert Loam, 0-3%, somewhat poorly drained, prime farmland	0-15, loam	15-36 , firm heavy loam over sandy loam	N/A	N/A	Sandstone and shale @ 36”
Ma – Eau Claire	Markey Muck, very poorly	0-30, muck	N/A	N/A	N/A	Sand @ 30”

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
(Routes A & B)	drained, not prime, farmable when drained (##)					
McA – Clark (Route A)	Maplehurst Silt Loam, 0-3%, somewhat poorly drained, prime when drained (**)	0-16, silt loam	16-47, silt loam over sandy loam @ 44”	5%>4.7 mm @ 16-44”; 50% > $ 44-60”	10%> 2 mm @ 16-44”; 55% > @ 44-60”	Gravelly coarse sand @ 47”; Gravelly sandy loam @ 44”
MdA – Monroe (Route B)	Meridian Loam, 0-2%, well drained, prime farmland	0-7, loam	7-26, sandy loam over loamy sand	N/A	N/A	Sand @ 26”
MdB – Monroe (Route B)	Meridian Loam, 2-6%, well drained, prime farmland	0-7, loam	7-26, sandy loam over loamy sand	N/A	N/A	Sand @ 26”
MnB – Clark (Route A)	Merit Silt Loam, 0-6%, well drained, prime	0-8, silt loam	8-20, silt loam. Substrat	N/A	N/A	Sand @ 30”;

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
	farmland		um beneath from 20-30" is sandy loam and sandy clay loam			
MoB – Clark (Route A)	Merit- Gardenville Silt Loam, 1-6%, well drained, prime farmland	0-9, silt loam	9-30, loam over sandy loam & sandy clay loam	N/A	N/A	Sand @ 30"
MxA – Clark (Route A)	Moppet-Fordum complex, 0-3%, moderately well drained, not prime (++)	0-5, fine sandy loam	5-35, fine sandy loam over silt loam	0%> 4,7 mm @ 5-35"; 45% > @ 35"	0%> 4.7 mm @ 5-35"; 50% > @ 35"	Gravelly sand @ 39"

Soil Map Unit & County, and Route(s) where Found	Soil Name and Description, Slope	Depth of Topsoil Layer, inches	Depth of Subsoil Layer, inches	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#4 Sieve Test = 4.7 mm = .18 inches)	Depth for Significant Difference in Gravel Content Within Subsoil and Parent Material? (#10 Sieve Test = 2 mm	Depth to Significant Gravelly, Rocky or Sandy Parent Material, inches
			and sandy loam			
SfA – Monroe (Route A)	Shiffer Loam, 0-3%, somewhat poorly drained, prime when drained	0-9, loam	9-21, loam over sandy loam	N/A	N/A	Sand and coarse sand @ 29”; loamy sand from 21-29”
Vd – Eau Claire (Routes A & B)	Veedum Silt Loam, very poorly drained, not prime (**)	0-17, silt loam over sandy loam	17-32, loam over silt loam	N/A	N/A	Sandstone & shale @ 38”; sandy loam or sand from 32-38”
Ve – Eau Claire (Routes A & B)	Vesper Loam, poorly drained, prime if drained (**)	0-17, loam	17-33, loam over heavy loam	N/A	N/A	Sandstone and shale @ 33”

(**) - Indicates that this soil is only a triple-lift candidate if the farm has a drainage system in place.
N/A – Indicates “not applicable” since there is no significant difference in gravel content between layers

(##) - This soil map unit is included because muck soils are specialty farmed when drained, and if only the top 12 inches or so are segregated during full corridor stripping, the lower portion of the potentially fertile muck layer could be lost if mixed with the sand parent material unless the triple-lift method is used.
(++) Check on-site re: Moppet-Fordum complex. Although Moppet is 45-60% of these soils, Fordum makes up 30-45% overall. The distribution may vary widely from site to site. The table entry for gravel content over the soil profile corresponds to the Soil Survey description for Moppet soils. But for Fordum, there is not this discrepancy in gravel content between upper and lower subsoil layers: 70% of soils may fail to pass a 4.7 mm sieve from 9" and below, while 75% may fail the 2 mm sieve test from 9" and below.

Portion of Project Routes where Triple-Lift Method would be Appropriate and Recommended
We next summarize for each triple-lift candidate soil map unit the estimated total area and length of right-of-way along project routes where it occurs. In making these estimates, we assume an average right-of-way width of 100 feet, which corresponds to the appropriate width for a pipeline in which full corridor stripping is used during construction. However, if the triple-lift method is used for candidate soils, farm right-of-way involving these soil map units may require up to 125 feet of right-of-way, depending on trench width and depth.

Table 22
Project Soils Requiring Triple-Lift Method of Construction on Farmland in Jackson County, and the Extent of Their Presence

Soil Map Unit (SMU)	Soil Description	Estimated Extent of Length (feet) Where SMU is Present on Route A	Estimated Extent of Length (feet) Where SMU is Present on Route B	Extent of Presence in Associated Facilities areas (acres)
BnB – 1234B	Bilson-Silverhill Sandy Loam, 1-6%	3262.5	1687.8	.23
BnC2 - 1234C2	Bilson-Elavasil Sandy Loam, 6-12%	2727.5	3949.8	___
HkB – 1266B	Hiles-Kert Silt Loam, 0-6%	1557.3	69.6	108.8
Vs- 1269A	Veedum-Elm Lake Mucks, 0-2%	48	100.1	2305.5

Soil Map Unit (SMU)	Soil Description	Estimated Extent of Length (feet) Where SMU is Present on Route A	Estimated Extent of Length (feet) Where SMU is Present on Route B	Extent of Presence in Associated Facilities areas (acres)
MoB- 1424B	Merit-Gardenvale Silt Loam, 1-6%	2356	11,714.6	____
CpC2 – 1740C2	Council-Bilson Fine Sandy Loam, 6-12%	____	392	____
HnB2 - 213B2	Hixton Silt Loam, 2-6%	____	304.5	____
HnC2 – 213C2	Hixton Silt Loam, 6-12%	191.4	304.5	____
ElB – 224B	Elevasil Sandy Loam, 2-6%	4128.2	4545.8	100.1
ElC2 – 224C2	Elevasil Sandy Loam, 6-12%	2853.6	1666.1	____
HuB – 286B	Humbird Fine Sandy Loam, 1-6%	2218.5	974.4	482.9
MpA – 288A	Merrillan Fine Sandy Loam, 0-3%	2130.1	1844.4	408.9
MnB – 424B	Merit Silt Loam, 1-6%	4236.9	1248.5	____
BlB – 434B	Bilson Sandy Loam, 1-6%	18,217.8	8974.1	____
MmA – 446A	Merimod Silt Loam, 0-3%	1000.5	430.7	____
SoA – 448A	Sooner Silt Loam, 0-3%	491.6	330.6	-----
BkA – 456A	Bilmod Sandy Loam, 0-35	2414,3	2253.3	269.7
HpA – 458A	Hoop Sandy Loam, 0-3%	147.9	3554	____
KeA – 268A	Kert Silt Loam, 0-3%	____	239.3	26,221.8
Pv – 1519A	Ponycreek-Dawsil complex, 0-2%	____	_____	21.8

Soil Map Unit (SMU)	Soil Description	Estimated Extent of Length (feet) Where SMU is Present on Route A	Estimated Extent of Length (feet) Where SMU is Present on Route B	Extent of Presence in Associated Facilities areas (acres)
Total – All SMUs for Jackson Co.		47, 982 feet = 9.09 miles	44, 584 feet = 8.44 miles	27,615 acres

* Estimates of SMU presence in linear feet were computed from GIS generated SMU acreages by county for farm parcels in the project right-of-way, and converted to linear feet by assuming an average width of 100 feet for the corridor right-of-way.

Table 23
Project Soils Requiring Triple-Lift Method of Construction on Farmland in Monroe County and the Extent of Their Presence

Soil Map Unit (SMU)	Soil Description	Estimated Extent of Length (feet) Where SMU is Present on Route A	Estimated Extent of Length (feet) Where SMU is Present on Route B	Extent of Presence in Associated Facilities areas (acres)
BlA	Billett Sandy Loam, 0-2%	_____	569.9	____
BlB	Billett Sandy Loam, 2-6%	3227.7	6111.8	____
BlC	Billett Sandy Loam, 6-12%	200.1	430.7	____
BmA	Billett Sandy Loam, 0-3%	1048.4	374.1	____
ElC	Eleva Sandy Loam, 6-12%	0.0	139.2	____
GaC	Gale Silt Loam, 6-12%	0.0	213.2	____
JaA	Jackson Silt Loam, 0-2%	126.2	413.3	____
JaB	Jackson Silt	100.1	548.1	.62

Soil Map Unit (SMU)	Soil Description	Estimated Extent of Length (feet) Where SMU is Present on Route A	Estimated Extent of Length (feet) Where SMU is Present on Route B	Extent of Presence in Associated Facilities areas (acres)
	Loam, 2-6%			
SfA	Shiffer Silt Loam, 0-3%	165.3	____	____
Dc	Dawson Peat	-----	30.5	-----
DdA	Dells Silt Loam, 0-3%	____	252.7	____
HpA	Hoopeston Sandy Loam, 0-3%	____	117.5	____
Ka	Kato Silt Loam,	-----	4.4	-----
MdA	Meridian Loam, 0-2%	____	2523	____
MdB	Meridian Loam, 2-6%	____	717.8	____
Total – All SMUs for Monroe Co.		4,867.8 feet = .92 miles	12,446.2 feet =2.36 miles	.62 acres

Table 24
Project Soils Requiring Triple-Lift Method of Construction on Farmland in Eau Claire County and the Extent of their Presence

Soil Map Unit (SMU)	Soil Description	Estimated Extent of Length (feet) Where SMU is Present on Route A	Estimated Extent of Length (feet) Where SMU is Present on Route B	Extent of Presence in Associated Facilities areas (acres)
AtB	Arland Sandy Loam, 2-6%	3058.1	1909.7	____
AtC2	Arland Sandy Loam, 6-12%	339.3	339.3	____

Soil Map Unit (SMU)	Soil Description	Estimated Extent of Length (feet) Where SMU is Present on Route A	Estimated Extent of Length (feet) Where SMU is Present on Route B	Extent of Presence in Associated Facilities areas (acres)
HeC2	Hiles Silt Loam, 6-12%	491.6	____	____
HkB	Hiles-Kert Soils, 2-6%	130.5	139.2	____
HnB	Hixton Loam, 2-6%	226.2	226.2	____
KeA	Kert Loam, 0-3%	2492.6	3075.5	.23
Ma	Markey Muck	87	87	-----
Vd	Veedum Silt Loam	461.1	461.1	____
Ve	Vesper loam	2196.8	2570.9	------
Total – All SMUs for Eau Claire Co.		9,483.2 feet = 1.8 miles	8,808.9 feet = 1.67 miles	.23 acres

Table 25
Project Soils Requiring Triple-Lift Method of Construction on Farmland in Clark County and the Extent of their Presence

Soil Map Unit (SMU)	Soil Description	Estimated Extent of Length (feet) Where SMU is Present on Route A	Estimated Extent of Length (feet) Where SMU is Present on Route B	Extent of Presence in Associated Facilities areas (acres)
McA	Maplehurst Silt Loam, 0-3%	91.4	____	____
MnB	Merit Silt Loam, 0-6%	656.9	____	____
MoB	Merit-Gardenvale Silt	1418.1	____	____

Soil Map Unit (SMU)	Soil Description	Estimated Extent of Length (feet) Where SMU is Present on Route A	Estimated Extent of Length (feet) Where SMU is Present on Route B	Extent of Presence in Associated Facilities areas (acres)
	Loam, 1-6%			
MxA	Moppet-Fordum Complex, 0-3%	9.0	____	____
Total – All SMUs for Clark Co.		2175.4 feet = .41 miles	____	____

Locations where the Triple-Lift Method is Recommended
Based on the GIS-generated list of owners of farm properties along the routes, the soil map units characterizing each parcel along the project right-of-way were identified. If the typical parcel size is 40 acres, The length of pipeline construction on that parcel would be just over 1,000 feet. DATCP recommends that at a minimum, WG should use the triple-lift method on farm parcels where 40 percent or more of the affected soils are triple-lift candidate soils. These parcels and the ones that are very close to these guidelines are listed in Tables 26 and 27. Other farmland owners with smaller amounts of triple-lift candidate soils may want to consider requesting the triple-lift method on their farmland.

Table 26
Owners of Farm Parcels where Triple-Lift Segregation is Recommended – Route A

Owner Name (Alphabetical)	Length of Parcel within ROW (computed from estimated parcel acreage assuming 100-foot right-of-way)
Beggs, Tonya Y.	1,298 feet
Behm, Charles W. & Joyce E.	474.8 feet
Boehm Revocable Trust Dtd.	1772.9 feet
Boettcher, Daniel R.	4,647.9 feet
Deer Creek Family Farm LLC	474.8 feet
Finch, Timothy R.	1,145.6 feet
Fischer Brothers	1,346.0 feet
Foremost Farms USA	383.3 feet
Frost, Timothy J. & Deborah I.	1,690.1 feet

Owner Name (Alphabetical)	Length of Parcel within ROW (computed from estimated parcel acreage assuming 100-foot right-of-way)
Gearing, Rodney E.	2,914.2 feet
Goose Landing Cranberry Co. LLC	666.5 feet
Harden, Kim K.	1,341.6 feet
Hart, Robert E.	1,023.7 feet
Haun Revocable Trust, Philip D.	339.8 feet
Hollingshead, Charles W.	1,407.0 feet
Jackson County	548.9 feet
Janell Land Company	7,797 feet
Kirsch, Karen R.	2,125.7 feet
Kubaskie, Dale W.	1,110.8 feet
Kujak, Marcel	1,014.9 feet
Kutchera, John G./Sheila R.	1,420.0 feet
Langan Trust, Kenneth W. & Dianne	509.6 feet
Larson, Richard L.	692.6 feet
Laufenberg, Jerome J.	1,258.9 feet
Laufenberg, Jerome J/ Hope F	2,334.8 feet
Markham, David W & Barbara J	1,158.7 feet
Matysik, Donald L & Mary Ann	1,180.5 feet
Mayer, Catherine S.	357.2 feet
Northern Christmas Tree Grower	2,631 feet
Olsen, Orville C.	1,315.5 feet
Patterson, Kim R.	2,125.7 feet
Pearson, Todd W.	1,171.8 feet
Peasley, David W.	1,163.0 feet
Peterson, David T.	1,611,7 feet
Prindle Farms Inc.	4,517.2 feet
Prindle Living Trust, 5/24/2006	8,023.8 feet
Prindle, Carol J.	1,929.7 feet
Prindle, Theron C.	483.5 feet
Ransom, Reid A.	448.7 feet
Risser, David & Julie L.	919.1 feet
Rudebeck, Don A.	2,539.5 feet
Scholze, David C.	914.8 feet

Owner Name (Alphabetical)	Length of Parcel within ROW (computed from estimated parcel acreage assuming 100-foot right-of-way)
Scholze, Duane A.	1,202.3 feet
Sell, Duane E. & Elaine M.	383.3 feet
Selz Farms Inc.	1,280.7 feet
Strandberg, Darold L.	757.9 feet
Strandberg, Judd E.	2,848.8 feet
Theis, Norman L. (land sold to Marvin Schulze)	1,354,7 feet
Tischer, Norman & Lydia	583.7 feet
Traczek, Frank J & Rozanne M	1,250.2 feet
Village of Alma Center	444.3 feet
Vojtik, Richard W.	749.2 feet
Wagner, Sharon R.	1,075.9 feet
Wontor, Christine A.	1,315.5 feet
Woodland Country Acres LLC	518.4 feet
Zahrte, Craig W. & Peggy	1,389.6 feet

Table 27
Owners of Farm Parcels Where Triple-Lift Segregation is Recommended – Route B

Owner Name (Alphabetical)	Length of Parcel within ROW (computed from estimated parcel acreage assuming 100-foot right-of-way)
Bahnub, Claire O.	531.4 feet
Bahnub, John R.	631.6 feet
Behm, Charles W & Joyce E	431.2 feet
Boehm Revocable Trust Dtd. May	1,772.9 feet
Brown, Patricia L.	849.4 feet
Coleman, James J.	1,001.9 feet
D & D Trust	365.9 feet
Deer Creek Family Farm LLC	474.8 feet
D'Huyvetter, Pascal A.	5,810.9 feet
Divyak, William	1,446.2 feet
Finch, Timothy R.	2,814.0 feet
Frelk, Calvin & Arlene	383.3 feet
Giese, Emil J.	566.3 feet

Owner Name (Alphabetical)	Length of Parcel within ROW (computed from estimated parcel acreage assuming 100-foot right-of-way)
Griffin, Kevin D & Susan M	988.8 feet
Haun Revocable Trust, Philip D.	422.5 feet
Helming, Richard A. & Jill N.	470.4 feet
Hollingshead, Charles W.	805.9 feet
Huber, Jerry L & Vicki	1,437.5 feet
Hulett, Gregory S.	409.5 feet
Jacobson Trust, 6/13/02 Vernon	505.3 feet
Jacobson, Charles M.	448.7 feet
Janke, Jeffrey	2,108.3 feet
Kubaskie, Dale W.	1,110.8 feet
Lauafenberg, Duane M	1,028.0 feet
Laufenberg, Jerome J	2,025.5 feet
Laufenberg, William J	1,921.0 feet
Lingo, Jon E.	2,173,6 feet
Markham, David W & Barbara J	1,158.7 feet
Massman, Brian J	2,609.2 feet
Matalas Family Trust, Feb. 5	862.5 feet
Matalas, Ronnie	483.5 feet
Mathison, Barbara S.	1,886.1 feet
Mathys, Jason W	914.8 feet
Matysik, Donald	1,001.9 feet
Matysik, Donald L & Mary Ann	1,921.0 feet
Meyer, Catherine S.	400.8 feet
Mitchell, Louis & Judy	2,430.6 feet
Moore, Edwin	640.3 feet
Mouradian, Gail E.	836.4 feet
Noak Joint Trust	1,707.6 feet
Northern Christmas Tree Growers	2,265.0 feet
Odeen, Andrew G.	2,199.8 feet
Peasley Trust	919.1 feet
Peasley, David W.	453.0 feet
Peasley, John T.	422.5 feet
Prindle Farms Inc.	1,851.3 feet

Owner Name (Alphabetical)	Length of Parcel within ROW (computed from estimated parcel acreage assuming 100-foot right-of-way)
Prindle Living Trust 5/24/06, Janet	483.5 feet
Prindle, Carol J.	1,873.1 feet
Prindle, Ralph E.	3,114.5 feet
Randall, Keith L.	949.6 feet
Risser, David S & Julie L	1,328.6 feet
Schreiber, Alyce J.	679.5 feet
Sell, Duane E & Elaine M	392.0 feet
Skelding, Melissa A.	723.1 feet
Stanley, Chad N.	766.7 feet
Stanley, Rebecca L.	483.5 feet
Sternaman, Janet M.	627.3 feet
Strandberg, Darold	1,385.2 feet
Thur, Thomas G.	1,006.2 feet
Tischer, Norman & Lydia	583.7 feet
Traczek, Frank J & Rozanne M.	1,250.2 feet
Waege, Gary F & Susan K	1,184.8 feet
Waughtal, Thomas J.	744.9 feet
Woodland Country Acres LLC	518.4 feet

Triple-Lift Soils Summary Supplement for Alternative Route Segments
WG has proposed short alternate segments in various locations on both routes. The following table summarizes the changes in the length of the corridor on farmland where the soils are candidates for triple lift soil segregation. The information is presented in order of landowner within segment.

Table 28
Comparison in the Length of the Corridor Affecting Triple-Lift Candidate soils for Alternate and Original Right-of-Way Alignments, (listed by owner within subsegment)

Route Alternative/ Landowner	Estimated Length of Owner's Land within Segment Requiring Triple Lift on Alternate Segment	Estimated Length of Owner's Land within Segment Requiring Triple Lift on Original Primary Segment
A.2.1 Alternative		
John G/Sheila R. Kutchera	265.7 feet	1,420 feet
Norman L. Theis	418.2 feet	522.7 feet
Peter D/Mary Beth White Jacobs	1,481 feet	191.7 feet
Segment Totals:	2,164 feet	2,134 feet
A.2.2 Alternative		
Janell Land Company	34.8 feet	1,912.3 feet (*)
Warren G. Millard	252.6 feet	------
AB.2-3		
Lisa M. Pfaff	745.2 feet	------
A.3.1 Alternative		
Janell Land Company	457.3 feet	Included in (*) above
Prindle Farms Inc.	3,219.1 feet	1,703.2 feet
A.4.1 Alternative		
Carol J. Prindle	261.4 feet	1,720.6 feet (**)
James E. Prindle Living Trust, 5/24//2006	6,129 feet	8,019.4 feet
A.5.1. Alternative		
Carol J. Prindle	2,596.2 feet	Included in (**) above
Jerome J. Laufenberg	1,106.4 feet	1,006.2 feet
Michael G. Kappen	1,424.4 feet	-----
Northern Christmas Tree Growers	1,494.1 feet	993.2 feet
Prindle Farms Inc.	2,740 feet	614.2 feet
Robert Comstock	2,509 feet	-----
Segment A.5.1. Totals:	11,870 .1 feet	4,334.2 feet
A.5.2. Alternative		
Christine A. Wontor	47.9 feet	383.3 feet
Clarence L. Vick	4.4 feet	-----
Don A. Rudebeck	779.7 feet	1,333 feet

Route Alternative/ Landowner	Estimated Length of Owner's Land within Segment Requiring Triple Lift on Alternate Segment	Estimated Length of Owner's Land within Segment Requiring Triple Lift on Original Primary Segment
Jerome McNulty	701.3 feet	-----
Mark A. Muth	457.4 feet	-----
Rodney E. Gearing	3,415.1 feet	727.5 feet
Thaddeus C. Walczak	243.9 feet	-----
Thomas G. Roskos	945.3 feet	-----
Segment A.5.2. Totals:	6,595.0 feet	2,443.8 feet
A.9.2. Alternative		
Barbara S. Mathison	69.7 feet	100.2 feet
AB.4.2 Alternative		
Brian Jay Stemper	566.3 feet	366.0 feet
B.2.1 Alternative		
Jerry L. & Vicki Huber	52.3 feet	422.5 feet
Ralph E. Prindle	61.0 feet	-----
B.2.2 Alternative		
Louis & Judy Mitchell	1,219.7 feet	-----
B.2.3. Alternative		
Kory J. Konda	636.0 feet	-----
B.4.1. Alternative		
Carol J. Prindle	261.4 feet	1,720.6 feet
James E. Prindle Living Trust, 5/24/06	2,369.7 feet	409.5 feet
Segment B.4.1 Totals:	2,631.1 feet	2,130.1 feet
B.9.1. Alternative		
Daniel S. Schroeder Irrevocable Trust	1,006.2 feet	1,280.7 feet

The following table lists the landowners whose farmland includes triple-lift candidate soils along the various segments of the alternative route, and the estimated percent of the length of their parcel within the pipeline right-of-way where the at-risk soils are located. The (*) identifies those farmland owners whose property meets or is close to the recommended thresholds.

Table 29
Farm Parcels on the Alternate Segments that have Triple-Lift Candidate Soils

Alternate Route Segment/Landowner Name	Length of Right-of-Way on Parcel (computed from estimated parcel acreage assuming 100-foot right-of-way)
A.2.1. Alternate	
Norman L. Theis	418.2 feet
Peter D/Mary Beth White Jacobs	1,446.2 feet
AB.2-3. Alternate	
Lisa M. Pfaff	745.2 feet
A.3.1. Alternate	
Prindle Farms Inc.	2,374.0 feet
A.4.1 Alternate	
James E. Prindle Living Trust	6,128.9 feet
B.9.1. Alternate	
Daniel S. Schroeder Irrevocable Trust	932.2 feet
A.5.1 Alternate	
Carol J. Prindle	3,118.9 feet
Jerome J. Laufenberg	1,106.4 feet
Michael G. Kappen	1,424.4 feet
Northern Christmas Tree Growers	1,494.1 feet
Prindle Farms Inc.	2,740.0 feet
Robert Comstock	2,509.1 feet
A.5.2. Alternate	
Don A. Rudebeck	779.7 feet
Jerome McNulty	701.3 feet
Mark A. Muth	457.4 feet
Rodney E. Gearing	3,850.7 feet
Thomas G. Roskos	945.3 feet
AB.4.2 Alternate	
Brian Jay Stemper	561.9 feet
B.2.3. Alternate	
Kory J. Konda	636 feet
B.2.2. Alternate	
Louis & Judy Mitchell	1,219.6 feet
B.4.1. Alternate	

Alternate Route Segment/Landowner Name	Length of Right-of-Way on Parcel (computed from estimated parcel acreage assuming 100-foot right-of-way)
James E. Prindle Living Trust	2,269.7 feet

Most of the associated facilities for the West Central Lateral project would involve fee-simple acquisitions of the land needed. Therefore, issues of on-site mitigation for agricultural lands would be moot on such land, which is permanently changing use away from agriculture. This is the case for the town border station, as well as the five district regulator stations. The two valve assembly sites are to be located directly above proposed pipe alignments and would not affect additional farming resources.

Soil Compaction

Potential Adverse Impact
Compaction of subsoil and topsoil during pipeline construction is another major adverse impact that can result from pipeline construction. Compaction reduces the uptake of water and nutrients by crops, restricts rooting depth, decreases soil temperature, increases the proportion of water-filled pore space at field moisture capacity, decreases the rate of decomposition of organic matter, decreases pore size and water infiltration, and increases surface runoff. The greater the depth at which soil compaction occurs, the more persistent it is. Even one pass of heavy equipment on the soil surface can cause 70 to 90 percent of the compaction impacts. Wet soils are more subject to compaction. Thus, potential damage from compaction may be greater where hydric soils (i.e. high water table) are present along the pipeline route. Also, the plow layer may appear dry, but the subsoil may still be saturated and subject to increased compaction potential during construction. Axle loads of 10 tons may cause compaction to a depth of 30 inches. (USDA NRCS, April 1996. Soil Quality Information Sheet on Compaction; Harold van Es and Robert Schindelbeck, Soil Compaction II: The Subsoil. What's Cropping Up, Vol. 1, No. 5; Soil Compaction by Wheels, Joseph K. Campbell, 1990)

It has been the experience of DATCP staff on previous pipeline projects that certain subsoil characteristics in combination pose significant barriers to post-construction de-compaction in the pipeline right-of-way. These characteristics include firmness or extra firmness in part or all of the subsoil; a low rate of water permeability; and moderate to high shrink-swell potential in subsoil layers.
The list of at-risk subsoils in Table 30 below is based on a complete review of the affected soils to identify where the subsoil layer is classified as "firm." This information was found

in the county soil surveys. (In two cases - the Fairchild-Elm Lake complex (FeA) and the Merrillan-Veedum complex (MrA) - , the SMU is not listed below because it does not actually occur among the farmland parcels along the project routes.)

For the selected soil map units (SMUs) listed as having firm subsoil layers, information is then appended as to the permeability rate and the shrink/swell potential in the relevant subsoil layers. Most of the SMUs listed below also have low permeability rates, which increase the difficulty of effectively de-compacting them, post-construction. In addition, several of the soils listed have a moderate to high shrink-swell potential in the layers characterized as firm. Some have a high water table. These operate as additional risk factors that can be expected to complicate the requisite de-compaction needed to return the right-of-way to its pre-construction state. The presence of these soils should be a flag to the agricultural inspector that extra attention will be needed to adequately restore the right-of-way on parcels with these soils.

Table 30
Subsoils that may Present Particular De-compaction Problems

Soil Map Unit/County	Description	Is there a subsoil layer that is nonfriable and/or has platy substructure?	Is there a low permeability rate in subsoil layers? (inches /hour)	Is there a high water table?/ What is shrink/swell potential in firm subsoil layer?
HkB (1266B) - Jackson	Hiles-Kert silt loam, 0-6%	Lower subsoil is firm clay loam	.2 to 2 in./hr. @20-28” down; 0-.6 in./hr. @ 31” (bedrock)	1-3 feet down/ Moderate
HuB (286B) - Jackson	Humbird fine sandy loam, 1-6%	Lower subsoil is firm silty clay	.06-.2 in./hr. @18-30”; 0-.6 in./hr. @30” (cemented shale & sandstone @ 34”)	1.5 to 3 feet down/High
HxB (286B, 288A) - Jackson	Humbird-Merrillan fine sandy loam, 1-6%	Lower subsoil is firm silty clay	.06-.2 in./hr. @ 18-31”; 0-.6 @ 31” (bedrock)	1.5 – 3 feet down/High

Soil Map Unit/County	Description	Is there a subsoil layer that is nonfriable and/or has platy substructure?	Is there a low permeability rate in subsoil layers? (inches /hour)	Is there a high water table?/ What is shrink/swell potential in firm subsoil layer?
KeA (268A) - Jackson	Kert silt loam, 0-3%	Lower subsoil is firm silty clay	.2 to 2 in./hr. @ 19-31”; 0-.6 @ 36” (sandstone & shale)	1 to 2.5 feet down/Moderate
LuB (296B) - Jackson	Ludington sand, 1-6%	Lower subsoil is firm clay loam	.2 to 2 in./hr. @ 28-39”; 0-.6 @ 39” (bedrock)	1.5 to 3.5 feet down/ Moderate
LxB (296B) - Jackson	Ludington-Fairchild sand, 0-6%	Lower subsoil is firm loam	.2 to 2 in./hr. @ 27-39”; 0-.6 @ 39” (bedrock)	1.5 to 3.5 feet down/Moderate
MpA (288A) - Jackson	Merrillan fine sandy loam, 0-3%	Lower subsoil is firm silty clay	.06 to .2 in./hr. @24-34”; 0-.6 @ 34 (bedrock)	1-2 feet down/Moderate
FpB – Eau Claire	Fallcreek loam, 2-6%	Subsoil is firm loam from 15 to 48” down; platy structure from 10-30” down	.2 to .6 in./hr. @8-60”	3 to 5 feet down/Moderate
HkB – Eau Claire	Hiles & Kert soils, 0-6%	Subsoil is firm silty clay loam from 22” to 27” down	.06 to .2 in./hr. @22-27”; bedrock @ 27”	3 to 5 feet town/Moderate
HnB – Eau Claire	Hixton loam, 2-6%	Subsoil is firm loam from 15 to 23” down	.6 to 2 in./hr. @ 15-23”;2 to 6 in./hr. @ 27-36”; bedrock @ 36”	Over 5 feet down/Moderate
KeA – Eau Claire	Kert loam, 0-3%	Subsoil is firm loam from 15-28” down	.2 to .6 in./hr. @ 15-28”; .6 to 2 in./hr.@ 28-36”	1 to 3 feet down/Low
LuC – Eau Claire	Ludington & Humbird soils, 6-	Subsoil is firm loam from 26-35”	.2 to .6 in./hr. @ 26-35”	3 to 5 feet down/Low

Soil Map Unit/County	Description	Is there a subsoil layer that is nonfriable and/or has platy substructure?	Is there a low permeability rate in subsoil layers? (inches /hour)	Is there a high water table?/ What is shrink/swell potential in firm subsoil layer?
	12%	down		
Vd – Eau Claire	Veedum silt loam	Subsoil is firm silt loam from 28-32”	.2 to .6 in./hr. @17-32”	0 to 1 foot down/Low
Ve – Eau Claire	Vesper loam	Subsoil is firm loam from 17-33” down	.2 to .6 in./hr. @26-33”	0 to 1 foot down/Low
CfA – Monroe	Coffeen silt loam, 0-3%	Platy structure from 28-34” down	.6 to 2 in./hr. @ 13-60”	1 to 3 feet down/High
KpA - Monroe	Kickapoo fine sandy loam, 0-3%	Platy structure from 5-26” down	.6 to 2 in./hr. @ 5-60”	3 to 6 feet down/Moderate
UfD2 - Monroe	Urne fine sandy loam, 12-20%	Firm subsoil from 32-38” down	2 to 6 in./hr. @ 20-32”	Over 6 feet down/Moderate

The following tables show which farmland owners along Route A or Route B have parcels that are likely to require extra effort to de-compact subsoil after pipeline construction. Only parcels where at least 25 percent of the right-of-way length contain these flagged, at-risk subsoils.

Table 31
Farm Parcels on Route A where Subsoil has Extra Risk of Compaction

Name of Landowner(s)	Estimated Length of Pipeline Right-of-Way (feet)	Percent of Right-of-Way Length with Compaction High-Risk Subsoil
Barr, James A. & Deborah A.	104.5 feet	100%
Behm, Charles W. & Joyce E.	474.8 feet	67.9%
Chitwood, James L.	1,102.1 feet	28.4%
Fischer Brothers	1,346.0 feet	37.2%
Frost, Timothy J. & Deborah I.	1,690.1 feet	26.0%
Goose Landing Cranberry Co. LLC	666.5 feet	56.9%
Harden, Kim K.	1,023.7 feet	87.2%

Name of Landowner(s)	Estimated Length of Pipeline Right-of-Way (feet)	Percent of Right-of-Way Length with Compaction High-Risk Subsoil
Kubaskie, Dale W.	1,110.8 feet	90.2%
Markham, Davie W. & Barbara J.	1,158.7 feet	100%
Matysik, Donald L. & Mary Ann	1,180.5 feet	27.7%
Mayer, Catherine S.	357.2 feet	54.9%
Northern Christmas Tree Growers	2,631.0 feet	26.7%
Olson, Wilfred J. & Barbara J.	535.8 feet	65.9%
Pearson, Todd W.	1,171.8 feet	36.8%
Pedersen, Gerald M.	1,293.7 feet	100%
Peterson, David T.	1,611.7 feet	65.1%
Prochaska Wilderness Inc.	257.0 feet	57.6%
R & T's Ridgeview Bar, LLC	4.3 feet	100%
Risser, David S. & Julie L.	919.1 feet	80.6%
Rouleau, Terry L.	34.8 feet	100%
Rudebeck, Don A.	2,540.0 feet	37.4%
Sell, Duane E. & Elaine M.	383.3 feet	79.5%
Tischer, Norman & Lydia	583.7 feet	100%
Village of Alma Center	444.3 feet	100%
Waege, Ronald C. & Karen K.	39.2 feet	67.7%
Wontor, Christine A.	1,315.5 feet	27.8%
Woodland Country Acres LLC	518.4 feet	100%
Zahrte, Craig W. & Peggy	1,389.6 feet	40.4%
Zahrte, Tim A.	318.0 feet	86.3%

Table 32
Farm Parcels on Route B where Subsoil has Extra Risk of Compaction

Name of Landowner(s)	Estimated Length of Pipeline Right-of-Way (feet)	Percent of Right-of-Way Length with Compaction High-Risk Subsoil
Alcorn, Linda J.	139.4 feet	96.9%
Bahnub, Claire & Lois	235.2 feet	100%
Bahnub, Claire O.	531.4 feet	30.3%
Bahnub, John R.	631.6 feet	89.7%
Barr, James & Deborah A.	104.5 feet	100%

Name of Landowner(s)	Estimated Length of Pipeline Right-of-Way (feet)	Percent of Right-of-Way Length with Compaction High-Risk Subsoil
Behm, Charles W. & Joyce E.	431.2 feet	74.7%
Bertram, Alexander L.	143.7 feet	100%
Bolton, Duane & Paulette	1,089.0 feet	46.8%
Chitwood, James L.	657.8 feet	100%
Kubaskie, Dale W.	1,110.8 feet	90.2%
Lamb, Terry L.	3,301.8 feet	36.4%
Markham, David W. & Barbara J.	1,158.7 feet	100%
Matysik, Donald	1,001.9 feet	31.7%
Matysik, Donald L. & Mary Ann	1,921.0 feet	67.1%
Peasley, John T.	422.5 feet	41.2%
Pedersen, Gerald M.	1,293.7 feet	100%
R& T's Ridgeview Bar, LLC	4.4 feet	100%
Renaud, George & Karalyn	322.3 feet	100%
Risser, David S. & Julie L.	1,328.6 feet	86.6%
Rouleau, Terry L.	34.8 feet	100%
Sell, Duane E. & Elaine M.	392.0 feet	71.1%
Tischer, Norman & Lydia	583.7 feet	100%
Waege, Ronald C. & Karen K.	39.2 feet	67.7%
Waughtal, Thomas J.	744.9 feet	42.1%

Soil Restoration: Removing Compaction in Subsoil and Topsoil
There can be long-term damage to agricultural productivity from deep soil compaction due to pipeline construction without adequate and proper de-compaction protocols and the right equipment. Fortunately, with the proper techniques, there are few subsoils that cannot be adequately de-compacted. Deep tillage devices are typically used on the exposed subsoil of the work and spoil storage area, after the subsoil has been backfilled over the trench and time has been allowed for trench settling.

The best choice for deep ripping is an industrial V-ripper, which should have 4 to 5 heavy-duty shanks, spaced 30 to 36 inches apart and pulled with 40 to 50 horsepower per shank. (It is best to use this with an articulated, 4-wheel drive tractor with the bulk of the weight in front.) Such rippers are often not readily available to typical farm operators. Other types of equipment such as chisel plows or paraplows may also be effective under some conditions. Multiple passes of the deep de-compaction device are essential over the compacted subsoil in

the right-of-way until sampled penetrometer readings in the right-of-way match those in adjoining fields that have not been disturbed by construction. The typical depth of ripping is 18 to 24 inches below the exposed subsoil. Multiple straight and zigzag patterns of ripping need to be used on different passes.

In lacustrine soils with intensive tile drain systems, deep ripping is usually limited to the top 6 to 8 inches of the subsoil layer because compaction from pipeline construction is usually undetectable below 8 inches, and deeper ripping could destroy the load-bearing capacity of the subsoil. However, in general, the presence of tile lines is no excuse to avoid fully doing the deep ripping phase of the soil restoration process. Without adequate de-compaction of subsoil, long-term productivity losses may persist on agricultural lands. Any damage to tiles during the deep ripping process must be treated by the pipeline company as a normal and necessary part of agricultural remediation expenses and replaced at their expense. Deep ripping and the other restoration steps that follow it must be done only in conditions of low soil moisture to prevent irreparable damage to soil from mixing or additional re-compaction.

It must be emphasized that delegation of de-compaction to farm operators in most cases is not recommended. They generally lack the proper equipment to correctly restore productivity after pipeline construction. The scope and depth of de-compaction from pipeline construction greatly exceeds that resulting from routine farm operations.

> "Recognize, overall, that the agri-environmental magnitude of soil profile compaction and the volumes of ripped rock materials and excavated stones and rocks associated with a construction right-of-way through glacial soil farmland – surpass the capability of the farm tractors and implements of the overwhelming majority of affected commercial farming operations. Establish that ripping, rock cleanup and soil profile shattering are basic components of farmland right-of-way restoration and are the full responsibility of the project, its contractor/subcontractor, and are not negotiable as responsibilities of the farmland owner or operator." (NY State Dept. of Agriculture and markets (1998) Commercial Agricultural Land Resources and Related Soils and Terrain Issues of Pipeline Construction, Restoration and Follow Up. March. Environmental Issues and Scoping Comments on Millennium Pipeline Co. and Columbia Gas Transmission Corp. submitted to FERC.

Penetrometer measurements are taken according to a sampling protocol to ensure de-compaction has occurred at representative sites throughout the topsoil and subsoil profile. It is very important that moisture conditions be comparable on and off the right-of-way throughout the soil horizon at the time of sampling since at the same bulk density, a soil will

give a much lower penetrometer resistance reading when wet than when dry. (Ward B. Voorhees, "The What, How and So-What of Soil Compaction." Nov. 19-20, 2001, Annual Crop Pest Management Short Course Proceedings. North Central Soil Conservation Research Laboratory. Morris, MN. p. 1)

Once effective deep de-compaction of subsoil has been established by penetrometer readings, rocks have been removed and topsoil replaced, a final subsoil shattering may be necessary to neutralize any additional compaction to the subsoil that accrued from the previous use of heavy equipment in de-compaction. This is done using an angled 3- or 4-leg tool bar, with leg spacing set no greater than 2 feet. Equipment commonly used for this includes a four-legged paratill or paraplow with the depth wheels disengaged to allow for maximum adjustment of depth of penetration. The angled legs are pulled slowly at an 18-inch depth (up to a maximum of 24 inches) using 50 horsepower per leg by a 4-wheel drive articulated tractor with the bulk of the weight in front traveling at a rate of 2.5 to 3 mph. This must be done only in conditions of low moisture to prevent damage to the soil profile and sloughing or mixing. Disking should not be used for subsoil shattering because it can mix and re-compact the subsoil and topsoil.

Drainage

Potential Adverse Impacts
In addition to damaging drainage tile, pipeline construction can permanently alter the soil profile, thereby affecting drainage patterns. The resulting de-stratification, or alteration, of soil horizons in the trenching operation may result in ponding or seeps that cause losses of crop yields. The possibility for the emergence of these problems should be carefully monitored and steps taken to do any needed remediation as soon as possible. It may take several years for these problems to become apparent, or even longer if there is a dry year. New drainage tiles and systems may be required to correct problems that arise. The location of significant seeps along the trench walls must be carefully monitored during the open construction phase of the project since the trench intercepts lateral drainage and causes seepage along the trench wall.

In some cases, seeps may be present prior to construction, but may be made more serious by construction. It is important to document the existing drainage patterns and any drainage problems as part of pre-construction planning. It is possible for pipeline construction to interfere with future plans for drainage systems in a field.

Adjacent fields may be affected by the change in the drainage profile due to the presence of a pipeline in the right-of-way. Future increases in surface flows to a landowner's fields may be exacerbated in some cases because of altered subsurface drainage profiles due to the pipeline.

Mitigation Procedures
The AMP requires that all damaged tiles be permanently repaired prior to backfilling. Repaired tiles on or adjacent to the right-of-way must be functionally equivalent to what was there prior to construction, and must consist of materials of the same or better quality. Local tile contractors should be used wherever possible.

Temporary ditch plugs and permanent trench breakers are used to help deter the pipeline corridor from acting as a channel for underground water flows.

WG should install any additional drainage tiles or other measures on agricultural land to properly drain wet areas on the permanent or temporary easements that were caused by pipeline construction. Where natural stratification has been altered, WG should install subsurface intercept drain tiles where they determine in conjunction with the Agricultural Inspector that this is needed to prevent surface seeps either in the right-of-way or on adjoining lands.

If installation of drainage tile is planned to occur within the next three years and drainage locations have been documented in writing, these documents should be provided to WG prior to construction.

Erosion and Conservation Practices

Potential Adverse Impacts
Construction sites provide the risk of soil erosion due to the destabilization of soil horizons, the piling of loose soils, and the extensive use of machinery and wheeled vehicles that affect the soil. During wet conditions, risks to soil from erosion are magnified. Wet conditions may be the normal soil condition on certain parcels along the pipeline route where there is a shallow depth to the water table, resulting in "wet trenching." Trench dewatering can also result in flooding, erosion and sedimentation on farm fields off the right-of-way unless appropriate measures are applied to prevent this.

As described in an earlier section, both topsoil and subsoil along the project routes are valuable resources. Significant erosion of either layer could have an adverse effect on long-term productivity on agricultural lands.

Approximately 32 acres of the original Route A corridor has soils with slopes of 12 percent or more. Another 59 acres of Route A have slopes of between 6 and 15 percent. The Route B corridor has approximately 15 acres of land with slopes that are 12 percent or greater and another 66 acres of land with 6 to 15 percent slopes. Land and soils with a Soil Capability Class of 4E to 8E and maximum slopes greater than 9 percent are deemed highly erodible. There may also be areas where the soils have serious water erosion problem on gentle slopes.

The path of the pipeline route would be up and down the slope of gently sloping soils. The collection of surface runoff in the tracks left by construction equipment can erode significant amounts of soil in local field areas.

Mitigation Methods
To avoid erosion, construction and restoration should not proceed if conditions are excessively wet. WG's AMP, Section 10 f, requires that the contractor on the construction spread to meet or exceed DNR standards for erosion control on construction sites. These standards are described on the DNR's website at: http://dnr.wi.gov/topic/stormwater/standards/index.html.

The AMP Section 8 allows the Agricultural Inspector to temporarily halt construction or restoration activities when the soil conditions are unfavorable due to weather conditions.

Existing erosion control practices such as diversion terraces, grassed or lined waterways, outlet ditches, water and sediment control basins, vegetated filter strips, etc. damaged due to construction activities will be restored to pre-construction condition.

Temporary erosion controls must be properly maintained on agricultural lands throughout construction and restoration on a daily basis. Whenever necessary, they must be reinstalled until permanent erosion controls are installed or restoration is completed. The details of erosion controls are described in AMP Sections 10.f and 10.i, BMP 03, and the Environmental Mitigation Plan.

WG will ensure that the construction contractor will structure work in a manner consistent with the requirements of the AMP and BMP's and maintain an adequate supply of approved erosion control materials on hand.

Temporary Access Roads

Potential Adverse Impacts
Temporary access roads may need to be created during the construction process to allow ingress and egress of personnel and equipment.

Such roads often cross agricultural fields. The potential effects of building access roads over soils are the same as many of those suffered by soils on the pipeline right-of-way. Topsoil can be mixed with subsoil, topsoil and subsoil can be compacted, drainage can be disturbed, and erosion can occur. Any of these effects can result in the loss of agricultural productivity on affected soils.

Mitigation Measures
WG will use existing farm roads to access the right-of-way whenever possible. The Company must consult with landowners before siting temporary access roads. (AMP, Section 10.b) Where new access roads are created on agricultural land, WG will strip the topsoil and temporarily stockpiled. Access roads will be designed to allow proper drainage and minimize soil erosion. Geotextile construction fabric may be placed below any imported rock used to build the road, in order to protect the subsoil. If desired by the landowner, temporary roads will be left in place after construction. If removed, the same soil restoration practices should be used on the temporary access road area as are used on the pipeline right-of-way to mitigate compaction. Any disturbance to drainage tiles or drainage patterns should be remediated as is done in the right-of-way. During the restoration phase, temporary and existing access roads will be restored to preconstruction conditions. New temporary access roads will be removed unless there is an agreement in writing between the landowner and WG.

Irrigation

Potential Adverse Impacts
Pipeline construction can interfere with the operation of field irrigation systems. Crops outside of the proposed pipeline right-of-way could also be negatively affected if irrigation is interrupted.

Mitigation Measures
WG has the right to temporarily disrupt irrigation systems that intersect the pipeline right-of-way during construction. However, they must notify the landowner beforehand to establish a mutually acceptable amount of time that the system can be taken out of service.

The maximum period of time out-of service without reducing yield on field corn is 5 – 7 days during the period from silking - tasseling to the finished crop (black layer). Earlier delays in meeting irrigation requirements may result in a smaller plant, but should not reduce grain production. Vegetable crops will have a shorter period between irrigations.

All irrigators along the pipeline route are urged to practice irrigation scheduling which records the daily evapotranspiration, rainfall, and amount of easily available water in the root zone. The irrigation schedule for the crop over the season will define any periods when the crop was stressed and yield and/or quality was reduced.

Any damages to the system (well, pumping plant, irrigation system – center pivot, traveling large volume sprinkler, buried supply lines, electrical supply lines) caused by the pipeline construction should be repaired as soon as possible. WG will establish with the landowner or tenant, an acceptable amount of time the irrigation system may be out of service.

Fencing

Potential Adverse Impacts
The construction process may in some cases necessitate severing fences that are located where the pipeline right-of-way will cross. Construction can interfere with grazing on adjacent lands. This could be particularly problematic for rotational grazing operations, which depend on precise, scheduled grazing in particular areas.

Mitigation Measures
Pre-construction planning should determine the presence of adjacent grazing operations, including rotational grazing, along the pipeline route. Efforts should be made to avoid severely disrupting grazing operations and to plan the route to avoid them if possible, or to consult the landowner to schedule construction to minimize disruptions.

Fences severed by construction of the pipeline must be restored to their previous condition at the time of construction using new posts and wire. If work crews construct temporary fences, they must be kept in place until vegetation canopy closure in the corridor occurs, unless the landowner chooses otherwise. Temporary fences and gates will also be installed where necessary at landowner request to allow continued grazing by livestock across the right-of-way. Tension on such fences must be adequate to prevent sagging, and there must be a distance of at least 3 to 5 feet from the pipe. Fence posts should not be placed on the backfilled trench. Temporary fences will be removed following construction, unless the landowner chooses otherwise. These measures are described in the AMP, Section 10.d.

Increased Rock Content of Soil

Potential Adverse Impacts
Because the pipeline trench will be excavated to a depth of 6 feet, rocky subsoil or glacial material may be brought to the surface and mixed with subsoil in the subsoil/spoil storage pile. Even where the triple-lift method is used, additional rocks may be spread through the subsoil layer.

In many areas along the right-of-way, this material may have greater rock content than the topsoil and subsoil layers typically do. Pipeline companies typically pad the area around the pipe with sand or stone-free subsoil to avoid damage to the pipe. Given the subsurface volume displaced by the pipe itself and by the padded stone-free area, the upper subsoil profile may be subject to a higher rock content than was present before excavation. Through frost heave dynamics, such rocks may end up near the surface eventually. Large stones at the surface can damage farm machinery and lead to added costs to landowners for removal.

Mitigation Measures
To avoid increasing the rock content of the subsoil, which eventually leads to rock-migration into the plow layer through frost-heave action, it is important that excess rocks of 3 inches in diameter or more are removed from the spoil pile before backfilling the trench. They should be removed to a site agreed upon with each landowner or off-site. Excess rocks should not be spread across the right-of-way, or added to the topsoil pile, or to other farm fields. In section 10.j of the AMP, WG has indicated that the size, density, and distribution of the rocks remaining on the construction work area will be the same as adjacent areas not disturbed by construction.

Weed Control

Potential Adverse Impacts
Noxious weeds may be spread in the course of moving machinery and vehicles from parcel to parcel during the construction process. One Environmental Impact Statement states:

> "Pipelines, access roads and drainages with flowing produced water can create corridors/conduits for weed spread…" (Powder River Basin Oil and Gas Project FEIS, Appendix N, Vol. 3, 2003)

Roads, including temporary access roads and off-road pipeline corridor transit lanes, can provide access for weeds into new areas. From the pipeline right-of-way, weeds may then spread to adjacent farm fields.

Mitigation Methods
WG has indicated that where the AI sees evidence that weed growth on stockpiled topsoil could present a problem to adjacent cultivated fields, the AI will consult with the Company Representative to have the weeds removed or killed prior to topsoil replacement. Refer to AMP Section 10.h. WG will consult with the landowner if spraying will be done to account for the owner's preference in cover crop and plans for the next year's crop. Any necessary herbicide spraying will be done by a state-licensed applicator. WG will not apply herbicides on organic farmland.

Tree and Stump Removal

Potential Adverse Impacts
Action by the pipeline company or its contractors may result in damage or loss of valuable trees belonging to a landowner. In addition, certain species of trees like black walnut and black cherry can be toxic to livestock.

Mitigation Measures
WG should consult with landowners before disposing of any trees or stumps that need to be removed from the pipeline right-of-way. Landowners have the right to retain ownership of any trees removed from their land. Typically, tree stumps are only excavated and removed from the trench area. Stumps in other parts of the right-of-way are usually cut at or near ground level. Refer to Section 10.c for additional details about vegetation removal. Disposal could consist of burying, burning, or removing the brush and stumps from the property. Black cherry or black walnut trees must be stockpiled or disposed of in ways that do not allow them to be accessible to livestock.

Seeding and Seedbed Preparation

Potential Adverse Impacts
If WG seeds over the right-of-way without consulting the landowner, this may interfere with cropping plans, or may result in a cover crop that is less than desirable from the landowner's standpoint.

Mitigation Measures
Following the steps in BMP 07: Seeding and Seedbed Preparation, WG would plant over the right-of-way only if the landowner agrees. BMP 07 specifies that seed mixes should be determined "in consultation with" the landowner when possible. Any seedbed preparation and seeding done by WG must be done at the correct time and at the proper depth to promote adequate seed-soil contact on cropland or pasture requiring seeding. Seeding is to be completed immediately after seedbed preparation if weather permits. Temporary erosion controls will be used if weather does not permit immediate seeding. If seeding is done outside of recommended windows, temporary erosion control methods such as mulching or temporary cover will be used. Seeding done outside the recommended windows will be done in conformity with Critical Area Planting conservation practice standards, and at rates determined by the Natural Resources Conservation Service.

Winterization Procedures

Potential Adverse Impacts
Complete restoration before the onset of winter conditions is not always possible based on conformance with the requirements of BMP 06, Soil Restoration. Options are to stockpile topsoil until spring, or to replace the topsoil and delay de-compaction and rock removal until spring. There are potential adverse effects in either of these cases. Stockpiling can result in erosion and loss of soil structure over winter. Replacing the topsoil can result in greater soil mixing and compaction.

Mitigation Measures
When restoration cannot be completed prior to the onset of winter based on BMP 06, a winterization plan should be implemented. After backfilling and removal of rocks, areas where soil moisture conditions do not allow soil de-compaction will be recorded. The topsoil will then be replaced during the winter "if conditions allow." Most farmland owners on previous pipeline projects have agreed to delay restoration of the corridor in this situation until the following year.

If the topsoil will remain separately stockpiled, WG should stabilize it with a winter cover seeding. A winter cover crop should be incorporated into restored and/or denuded areas at landowner request but there is no language requiring this, or specifying landowner choice regarding the appropriate cover crop. Bridges and timber mats will be removed in fully restored areas that are no longer required for access to the right-of-way. Temporary erosion control measures will be installed in conformance with WG’s Environmental Mitigation

Plan. DATCP recommends that this should be done in consultation with the Agricultural Inspector.

In the spring when soil moisture conditions permit, as determined by the Atterberg Field test applied to the topsoil and subsoil, de-compaction on the subsoil should proceed. If the topsoil was replaced in the trench over the winter, WG may attempt to de-compact the subsoil through the topsoil. If this cannot be done to the standard required by BMP 06, the topsoil should be removed and stockpiled, and deep ripping done on the bare subsoil profile until it meets the standards of BMP 06. Following this, the remaining steps of restoration in BMP 06 would occur. If topsoil was instead stockpiled over the winter, de-compaction and the remaining restoration steps will proceed directly per BMP 06, soil conditions permitting.

Organic Farms and Biosecurity at the Farm Level

Soil adhering to pipeline construction equipment can transport animal or plant diseases from field to field. In addition, the transport of pesticides or genetically modified organisms (GMO's) can cause significant economic losses.

Organic Farms Potential Adverse Impacts
For certified organic farms, pertinent contamination issues can involve a very broad range of "prohibited substances" under certification standards. Spread of prohibited substances to organic farms can occur directly through construction machinery, or indirectly through changes in surface or subsurface drainage patterns that impact water flowing within or between fields. WG's right-of-way representatives will contact landowners to request information on each land parcel. This request for information will include whether organic farmland would be affected by pipeline construction.

Another concern involves the possibility that the presence of the subsurface channel created by the pipeline may accelerate migration of pesticides and fertilizer onto adjoining properties. Trench plugs are used to minimize this problem. BMP 03 requires trench plugs at the boundary line with organic farms to address this concern. Under no circumstances will discharge water be allowed to runoff from non-organic farm operations onto adjacent, certified organic farm operations. (AMP 10.f and BM 03) If certification is lost, it may take years to re-establish it, with a resulting loss of premium income.

According to the certification standards of the National Organic Program (NOP), owners of organic operations are responsible to manage potential contact with other substances not approved for use in organic production and must outline steps they will take to avoid such

unintentional contact. (Preamble, p. 9, NOP, USDA) This suggests the responsibility of organic growers during easement negotiations with WG to negotiate a route change to avoid the operation entirely or secondarily, to make provision to avoid unintentional contact with prohibited substances. Specifically, S.205.202 (c), of the Final Rule establishing NOP requires any field or farm parcel harvesting organic crops to: "Have distinct, defined boundaries and buffer zones such as runoff diversions to prevent the unintended application of a prohibited substance to the crop or contact with a prohibited substance applied to adjoining land that is not under organic management." Each situation would need to be addressed on a case-by-case basis. Recently, the first organic mitigation agreement was negotiated between the Gardens of Eagan farm and the Minnesota Pipe Line. (Catherine, Komp, "Farmers, Residents Battle Minnesota Oil Pipeline Plan", New Standard, Sept. 14, 2006) The plan still requires approval by the Minnesota Public Utilities Commission.

However, "As long as an organic operation has not used excluded methods and takes reasonable steps to avoid contact with the products of excluded methods ..., the unintentional presence of the products of excluded methods should not affect the status of an organic product or operation." (USDA, NOP, Ibid.) So as long as the organic owner negotiates due diligence protection with WG, the USDA is unlikely to decertify them even if contamination occurred due to the pipeline. However, depending on the extent of such contamination, the certifying agency may decertify the land.

Presumably, in situations where groundwater flows and topography make this possible, the baseline situation would already pose a contamination risk. Under no circumstances will discharge water be allowed to runoff from non-organic farm operations onto adjacent, certified organic farm operations. The issue is only the incremental increase in risk or impact specifically due to the construction of the pipeline. It is hard to evaluate the quantitative impact of this scenario.

WG will demarcate boundaries of certified organic farming operations. Landowners who have specific concerns about this issue are advised to incorporate mitigation measures or potential damages into their easement negotiations with the pipeline company.

WG has indicated that, if any construction activities occur on a Certified Organic Farm, WG will work with the landowner or tenant, the landowner and/or tenant's certifying agent to identify site-specific construction practices that will minimize the potential for decertification as a result of construction activities

Animal Disease Spread Potential Adverse Impacts
According to the then-acting Wisconsin State Veterinarian, "There are a number of infectious diseases that can be transmitted between facilities and potentially may result in significant economic losses. Salmonella, bovine viral diarrhea, cryptosporidium, pseudorabies, and Johne's Disease are examples of such organisms. A common means of spreading these diseases is by moving contaminated manure from one farm to another. Such movement can easily occur if contaminated manure is on boots, clothing, equipment and vehicles that are moved from one farm to another." (Rebuttal Testimony of Dr. Robert G. Ehlenfeldt, DATCP before the Public Service Commission of Wisconsin, Docket Number 05-CE-113, August 29, 2003)

The potential spread of livestock disease from farm to farm will be managed by fencing and relocating livestock away from the pipeline right-of-way. In addition, WG will request that farmland owners not spread manure prior to pipeline construction. Some farm operators are becoming more conscious of applying biosecurity measures on their land, as are the agribusinesses that serve them. According to one report,

"Farmers are beginning to post biosecurity signs at their barn doors or farm entrance. Visitors are asked to stop at the office, and if they are allowed onto the farm at all, they are being asked to put on disposable boots and sometimes even disposable clothing….the awareness has also led to a step-up in biosecurity measures from the standpoint of agribusinesses serving farms. … The heightened awareness of biosecurity has also led feed mills across the state to refuse to reuse feed bags, a practice that has been common as a cost-saving measure for years. Rohrer says pressure from the Wisconsin Department of Agriculture, Trade and Consumer Protection led to a decision to change their policy….The DATCP's concerns are not only about the more recent fear of foot-and-mouth disease spread…. There is also concern about the spread of things like Johne's disease." (Gloria Hafenmeister, 2001, "Farms Not the Only Businesses Stepping up Biosecurity Measures." Wisconsin State Farmer, June 22. p. 3A)

WG personnel should consult with landowners in pre-construction planning to identify properties along the pipeline right-of-way that have animal operations and apply manure to fields. WG should negotiate with landowners to attempt to schedule manure applications at times that do not conflict with construction on the right-of-way and to develop fencing arrangements for livestock pasture to exclude livestock from the construction right-of-way. In addition, WG personnel should consult with landowners in pre-construction planning to identify any biological security protocols maintained for any farm operation, and take steps to maintain pipeline protocols at least as stringent as normally used by the farmer.

Plant Disease Spread Potential Adverse Impacts
According to the former Section Chief of the Plant Protection Section at DATCP,

> "If insects, diseases, noxious weeds or harmful invasive species are introduced into a population of plants, or onto an agricultural property, these organisms can have significant negative consequences for that agricultural producer and for the state's agricultural industry. For example, potato rot nematode is a serious disease of potato affecting both production and export of potatoes. Potato rot nematode can be transported by any mechanism that moves soil from one location to another. It can be transported by a very small quantity of soil from an infected field." (Rebuttal Testimony of Robert A. Dahl, DATCP, before Public Service Commission of Wisconsin, Docket Number 05-CE-113, August 29, 2003)

Prior to construction, WG should identify crops that would be susceptible to disease, such a ginseng and potatoes, and work with the landowners on construction practices that prevent the spread of diseases from field to field.

Trench Dewatering

Before lowering the pipe into the trench, dewatering of the trench may be necessary to inspect the bottom of the trench for rocks.

Potential Adverse Impacts
Any combination of weather, topography and/or hydric soils (i.e. those with a high water table) can result in conditions of wet trenching along parts of the pipeline route that are farmed. In this case, extra care is needed to avoid mixing, compaction, and erosion of subsoil. Trench dewatering is typically done in such cases. If done improperly, it can result in erosion of soil from the right-of-way; sedimentation and deposition of gravel, sand, or silt onto adjacent agricultural lands; and inundation of crops.

The table below lists the owners of agricultural land where soils in the pipeline corridor are likely to result in wet trenching over at least 25 percent of the length of the right-of-way during construction.

Table 33
Farmland Property on Route A with 25% or More Right-of-Way Soils Likely to have Wet Trench Conditions during at Least Part of the Construction Time

Name of Landowner(s)	Estimated Length of Parcel Along Pipeline Right-of-Way (in feet) subject to wet trenching due to high water table	Percent of Parcel Length Covered by Subsoil map units with water table in the top 5 feet of soil profile during part of the year
Baerbock, Ronald E.	222.2 feet	100%
Bailey, Thomas E. & Joan A.	383.3 feet	100%
Baker, David	588.1 feet	81.2%
Barr, James A. & Deborah A.	104.5 feet	100%
Beggs, Tonya Y.	470.4 feet	36.2%
Behm, Charles W. & Joyce E.	335.4 feet	67.9%
Bertram, Alexander L.	143.7 feet	100%
Brown, Erik R.	65.3 feet	100%
Burkhalter, Allan R.	1,089 feet	85%
Chitwood, James L.	1,045.4 feet	94.9%
Classey, Val J.	1,272 feet	997%
Coleman, Anthony E.	1,075.9 feet	55.9%
Divyak, William	135 feet	86.1%
Eau Claire County	4.4 feet	100%
Finch, Timothy R.	710 feet	62%
Fischer Brothers	500.9 feet	37.2%
Frost, Timothy J. & Deborah I.	779.7 feet	46.1%
Goose Landing Cranberry Co. LLC	379 feet	56.9%
Gorham, Florieda M.	2,230.2 feet	88.1%
Gorham, Ronald	3,763.6 feet	100%
Hall, Donald J.	1,868.7 feet	80%
Hanson, Gregory & Mary	370.3 feet	36.3%
Hart, Robert E.	1,034.7 feet	100%
Henzl, Esther	453 feet	100%
Hollingshead, Charles W.	557.6 feet	39.6%
Janell Land Company	4,181.8 feet	78.3%
Johnson, Teresa L.	183 feet	91.3%
Jorgensen, Elmer E. & Gloria F.	191.7 feet	100%

Name of Landowner(s)	Estimated Length of Parcel Along Pipeline Right-of-Way (in feet) subject to wet trenching due to high water table	Percent of Parcel Length Covered by Subsoil map units with water table in the top 5 feet of soil profile during part of the year
Kubaskie, Dale W.	1,001.9 feet	90.2%
Lamb, Terry L.	3,680.8 feet	96.5%
Lambert, Travis R.	65.3 feet	31.9%
Langan Trust, Kenneth W. & Dianne	448.7 feet	85.4%
Laufenberg, Frank A.	69.7 feet	100%
Liddane, Timothy E.	2,992.6 feet	84.9%
Markham, David W & Barbara J	1,158.7 feet	100%
Mathison, Barbara S.	1,777.2 feet	69.5%
Mayer, Catherine S.	357.2 feet	100%
Northern Christmas Tree Growers	701.3 feet	26.7%
Olson, Wilfred J & Barbara J	365.9 feet	68.3%
Paradise Valley Cranberries LLC	636 feet	63.2%
Pearson, Todd W.	583.7 feet	49.8%
Peasley, David W.	535.7 feet	46.1%
Pedersen, Gerald M.	1,293.7 feet	100%
Pedersen, Gerald M & Merrylin S	34.8 feet	100%
Peterson, David T.	1,232.7 feet	76.5%
Pierce, Jody L.	230.9 feet	100%
Pierce, Kenneth & Susan L.	710 feet	47.4%
Plunkett Land Holdings LLC	3,580.6 feet	97.4%
Prindle Farms Inc.	2,330.5 feet	51.6%
Prochaska Wilderness Inc.	148.1 feet	57.6%
Prochaska, Antone L.	47.9 feet	100%
R & T's Ridgeview Bar, LLC	4.4 feet	100%
Risser, David S & Julie L	740.5 feet	80.6%
Rouleau, Terry L.	34.8 feet	100%
Rudebeck, Don A.	1,084.6 feet	42.7%
Schroeder Irrevocable Trust, DA…	283.1 feet	54.2%
Sell, Duane E & Elaine M.	392 feet	100%
State of Wisconsin, Dept. of Transport.	8.7 feet	33.3%

Name of Landowner(s)	Estimated Length of Parcel Along Pipeline Right-of-Way (in feet) subject to wet trenching due to high water table	Percent of Parcel Length Covered by Subsoil map units with water table in the top 5 feet of soil profile during part of the year
Tischer, Norman & Lydia	583.7 feet	100%
Town of La Grange – Co. HWY E	104.5 feet	100%
Tubbs, Lowell F. & Brenda M.B.	448.7 feet	100%
Village of Alma Center	444.3 feet	100%
Vojtik, Richard W.	431.2 feet	57.6%
Von Haden, Roland L.	1,054.2 feet	83.4%
Waege, Ronald & Karen K.	39.2 feet	100%
Wilder, Timothy T & Nancy J	56.6 feet	100%
Williams, James E.	379 feet	42.2%
Wontor, Christine A.	1,228.4 feet	93.4%
Woodland Country Acres LLC	518.4 feet	100%
Zahrte, Craig W. & Peggy	561.9 feet	40.4%

Table 34
Farmland Property on Route B with 25% or More Right-of-Way Soils Likely to have Wet Trench Conditions during at Least Part of the Construction Time

Name of Landowner(s)	Estimated Length of Parcel Along Pipeline Right-of-Way (in feet) subject to wet trenching due to high water table	Percent of Parcel Length Covered by Subsoil map units with water table in the top 5 feet of soil profile during part of the year
Alcorn, Linda J.	135 feet	96.9%
Arity, Leone M.	1,803.4 feet	66.9%
Bahnub, Claire & Lois	235.2 feet	100%
Bahnub, Claire O.	531.4 feet	100%
Bahnub, John R.	631.6 feet	100%
Barr, James A & Deborah A	104.5 feet	100%
Behm, Charles W. & Joyce E.	322.3 feet	74.7%
Bertram, Alexander L.	143.7 feet	100%
Bolton, Duane & Paulette	1,089 feet	100%

Name of Landowner(s)	Estimated Length of Parcel Along Pipeline Right-of-Way (in feet) subject to wet trenching due to high water table	Percent of Parcel Length Covered by Subsoil map units with water table in the top 5 feet of soil profile during part of the year
Boullion, Jack J.	174.2 feet	67%
C. & N.W. Railroad	26.1 feet	100%
Camacho, Peter M.	4.4 feet	100%
Chambers, Darrell	1,097.7 feet	100%
Chitwood, James L.	657.8 feet	100%
Coleman, Anthony E.	47.9 feet	100%
Divyak, William	518.4 feet	35.8%
Eau Claire County	4.4 feet	100%
Finch, Timothy R.	880 feet	31.3%
Fischer, Paul J.	17.4 feet	80%
Hackett, Claude & Leslie	13.1 feet	100%
Honish, Stephen V & Leanne M	1,607.4 feet	42%
Hutchens, Devin R.	8.7 feet	100%
Koenig, Kim D.	1,041.1 feet	100%
Kubaskie, Dale W.	1,001.9 feet	90.2%
Lamb, Terry L.	2,944.7 feet	89.2%
Liddane, Timothy E.	1,786 feet	79.5%
Markham, David W. & Barbara J	1,158.7 feet	100%
Matalas Family Trust, Feb 5th,…	862.5 feet	100%
Matalas, Randy W.	21.8 feet	100%
Matalas, Ronnie	47.9 feet	100%
Matuschka, Mark J & Vicki L	8.7 feet	67.7%
Matysik, Donald	413.8 feet	41.3%
Matysik, Donald L & Mary Ann	1,062.9 feet	55.3%
Mayenschein, Leland Dale	993.2 feet	100%
Mayer, Catherine S.	357.2 feet	100%
McGinnis, Dennis J.	56.6 feet	30.2%
Milem, William G.	135 feet	100%
Morrison, Roxie M.	723.1 feet	100%
Mouradian, Gail E.	235.2 feet	28.1%

Name of Landowner(s)	Estimated Length of Parcel Along Pipeline Right-of-Way (in feet) subject to wet trenching due to high water table	Percent of Parcel Length Covered by Subsoil map units with water table in the top 5 feet of soil profile during part of the year
Northern Christmas Tree Growers	1,010.6 feet	44.6%
Odeen, Andrew G.	2,195.4 feet	99.8%
Peasley Trust	919.1 feet	100%
Peasley, David W.	291.9 feet	64.4 %
Peasley, John T.	422.5 feet	100%
Pedersen, Gerald M.	1,293.7 feet	100%
Pedersen, Gerald M & Merrylin S	34.8 feet	100%
Plunkett Land Holdings LLC	3,580.6 feet	98.9%
R & T's Ridgeview Bar, LLC	4.4 feet	100%
Renaud, George & Karalyn	322.3 feet	100%
Risser, David S & Julie L	1,150 feet	86.6%
Ritter, Kevin L.	2,378.3 feet	60.3%
Rouleau, Terry L	34.8 feet	100%
RR	26.1 feet	100%
Schemel Living Trust, Lorraine…	100.2 feet	34.8%
Schreiber, Alyce J	265.7 feet	39.1%
Schroeder Family Trust, Russell…	3,171.2 feet	89.1%
Schroeder Irrevocable Trust, David…	2,217.2 feet	87.8%
Seflow, Gilbert	509.7 feet	51.5%
Sell, Duane E & Elaine M	392 feet	100%
Skelding, Melissa A.	723.1 feet	100%
ST P M & O RR	4.4 feet	100%
State of Wisc. Dept. of Transport.	13.1 feet	37.5 %
Sternberg, Barbara J	21.8 feet	100%
Sternaman, Janet M	457.4 feet	72.9%
Strandberg, Darold	248.3 feet	26.3%
Tischer, Norman & Lydia	583.7 feet	100%

Name of Landowner(s)	Estimated Length of Parcel Along Pipeline Right-of-Way (in feet) subject to wet trenching due to high water table	Percent of Parcel Length Covered by Subsoil map units with water table in the top 5 feet of soil profile during part of the year
Von Haden Special Trust, Donald	801.5 feet	100%
Waege, Ronald C. & Karen K.	39.2 feet	100%
Waters, Daniel J.	657.8 feet	100%
Waughtal, Thomas J	744.9 feet	100%
Williams, James E.	675.2 feet	77.9%
Woodland Country Acres LLC	518.4 feet	100%

Table 35
Farmland Property on Alternate Routes with 25% or More Right-of-Way Soils Likely to have Wet Trench Conditions during at Least Part of the Construction Time

Alternate Route/Landowner Name	Estimated Length of Parcel Along Pipeline Right-of-Way (feet)	Percent of Parcel Length Covered by Subsoil map units at risk in Wet Trenching for Part of the Year
A.3.1 Alternate		
Janell Land Company	4,347.3 feet	68.4%
Prindle Farms Inc.	2,138.8 feet	59.4%
A.5.1. Alternate		
Jerome J. Laufenberg	692.6 feet	38.5%
William M. Spencer	396.4 feet	100%
A.5.2 Alternate		
Christine A. Wontor	274.4 feet	47%
Clarence L. Vick	187.3 feet	42.6%
Jerome J. McNulty	400.8 feet	56.8%
Mark A. Muth	775.4 feet	69.5%
A.9.1 Alternate		
James L. Chitwood	923.5 feet	82.8%
A.9.2 Alternate		
Anthony E. Coleman	1,115.1 feet	82.3%
Barbara S. Mathison	827.6 feet	65.1%

Alternate Route/Landowner Name	Estimated Length of Parcel Along Pipeline Right-of-Way (feet)	Percent of Parcel Length Covered by Subsoil map units at risk in Wet Trenching for Part of the Year
A.9.3 Alternate		
Kenneth & Susan L Pierce	775.4 feet	69.3%
A.9.4 Alternate		
Ronald Gorham	3,053.6 feet	100%
B.9.1 Alternate		
Daniel S. Schroeder Irrevocable Trust	1,219.7 feet	53.7%
AB.4.2 Alternate		
Brian J. Stemper	566.3 feet	31.6%

Mitigation Measures
BMP 05, Trench Dewatering, requires identification by WG contractors of low areas and hydric soils that are likely to collect water during construction, as well as suitable areas for the discharge of water accumulated within the pipe trench or other excavated areas. WG's contractors are required to structure work to minimize accumulation of water within the trench and to get WG's approval for all discharge locations and techniques to comply with BMP 05. Discharge locations must be well-vegetated areas that prevent the water from returning to the right-of-way; be as far from backfilling activities as possible; and avoid deposition of gravel or sediment onto fields, pastures, or watercourses. If delivery of trench water onto cropland is unavoidable, crops cannot be inundated for more than 24 hours without severe damage to the crop. Discharge of water from non-organic farms or from hydrostatic testing is not allowed to flow onto adjacent organic farm operations.

Silt or sediment extraction from the trench is required to be minimized by preventing the intake from touching the bottom or sides of the trench, and by ensuring that the intake is supported by a flotation device. WG control measures must be used as necessary to divert the flow of pumped water to prevent erosion. Dewatering will be monitored by the AI or EI and stopped whenever necessary to correct conditions and practices inconsistent with BMP 05. When construction in hydric soils creates wet trenching and dewatering activities that cause damages that cannot be avoided, WG will reasonably compensate the landowner for damages and restore the land and crops to pre-construction conditions.

Induced Current on the Pipe

A small direct (DC) current is applied to pipelines for cathodic protection to prevent corrosion of the pipe material. Because pipelines, particularly if located in transmission line corridors, can be carriers of induced alternating (AC) current, the pipeline industry takes precautions to discharge AC current along the pipe into the ground. This is necessary both to protect the integrity of the DC cathodic protection system as well as to prevent continued flow of AC current in the pipe. If induced AC current is not grounded adequately, the AC discharge on the pipeline "can, in the long term, cause serious metal loss on the pipe wall and leaks." (Smart, Oostendorp and Wood, 1999)

Potential Impacts on Property Taxes

In general, property tax assessments would not be affected by the presence of a pipeline easement. The statute governing the assessment of farmland was affected by the passage of the 1995 Wisconsin Act 27. This act changed the standard by which agricultural land is assessed from market value to use value. Land that is subject to an easement while still being used for agriculture remains classified as "Agricultural" for purposes of tax assessment. (WDOR, 2000, 6) Under use value assessment, adjustments can still be made by local assessors to more accurately reflect the use value of a parcel, based on factors unique to that parcel. (WDOR, 2000, 9) In general, however, there is no discount factor for agricultural land encumbered by a pipeline. According to the Equalization Supervisor of WDOR District One, there have generally not been any farmland sales that show a significant reduction in value due to the presence of a pipeline right-of-way. The land above the pipeline can still be cultivated, so the assessed value of farmland is not affected. Nevertheless, local assessors are still advised to examine each farm parcel on a case-by-case basis. If it can be shown that there are adverse effects to agricultural productivity and use due to the pipeline, than this would presumably be legitimately included as an adjustment factor in assessing the easement strip. It should be kept in mind that under the regime of use value assessment, only constraints imposed for agricultural uses of the parcel are relevant, not those that affect other nonfarm uses to which the parcel could be adapted.

Enforcement of the AMP and BMPs and the Role of the Agricultural Inspector

WG will employ a team of Environmental Inspectors (EIs), including an Agricultural Inspector (AI), to provide oversight and enforcement of various environmental permits and

plans. The EIs and AI will report to the Environmental Manager at WG. The AI will monitor construction activities for compliance with the AMP and BMPs. The AI will be familiar with general agricultural operations including agronomy and soil conservation as well as general construction.

Contractors will be required to structure their construction activities to be consistent with the AMP and the BMPs. WG will work with landowners to ascertain existing agricultural operations that may require special attention, such as conservation practices, location of above and below ground structures or obstructions, such as drain tile, irrigation systems, fencing, livestock, certified organic lands, proposed new drainage systems or other farm technology.

The AI retains a key role through each stage of the sequence of pipeline construction. Where a number of different operations are progressing in sequence at different sites along the line, the AI will travel between the various sites doing spot-checking of each operation in progress.

Refer to the Appendix for the complete text of the AMP and BMPs.

During clearing and grading, the AI will monitor topsoil stripping after clearing but before grading takes place. This is done to ensure that no mixing of topsoil and subsoil occurs in the grading process. The AI will ensure that any cleared brush and timber are disposed of in accord with each landowner's preferences. He/she will oversee topsoil removal for any temporary access roads that are created. They will document any damage to or interference with irrigation systems or conservation practices.

During the period when the trench is open, the AI will monitor any trench dewatering activities (BMP 05), and any damage to drainage tiles and subsequent repair (BMP 04). He/she will monitor the integrity of the topsoil storage piles and ensure the adequate separation between subsoil and topsoil storage piles. He/she will note any seepage problems and oversee installation of trench plugs (BMP 03). In coordination with other inspectors, he/she will ensure the integrity of temporary erosion control measures taken (BMP 03).

The AMP Section 6 includes a job description of the role and responsibilities for the AI.

The AI will review project documents including right-of-way descriptions, permits, alignment sheets, and construction plans, including the Environmental Construction Plan (ECP) and the BMP's. He/she will also review information supplied by farm operators and

others, and may participate in design and implementation of WG's training program for inspection and construction crews, their communication plan for landowners, and their overall implementation plan.

If additional temporary workspace is required to ensure proper performance of mitigation measures, this decision will be made in concert with the AI.

The Agricultural Inspector will:

- be a full-time member of WG's environmental inspection team;
- be responsible for verifying WG's compliance with provisions of this AMP during construction;
- work collaboratively with other WG inspectors and right-of-way agents in achieving compliance with the AMP and BMPs;
- observe construction activities on agricultural lands;
- have the authority to stop construction activities that are determined to be out of compliance with provisions of the AMP and BMPs;
- document instances of noncompliance and work with construction personnel to identify and implement appropriate corrective actions as needed;
- provide construction personnel with training on provisions of the AMP and BMPs before construction begins;
- provide construction personnel with as-needed field training on specific topics; and
- advise the Environmental Manager and Construction Manager regarding stopping work during wet soil conditions

If the AI discovers actions that do not appear to meet the AMP requirements, he/she may stop-work at that location if necessary and will immediately contact the Environmental Manager or the Construction Manager who will determine if site-specific restoration action is necessary. They will also ensure that the erring contractors are trained in the appropriate construction methods. (AMP, Section 8)

Appraisal and Compensation

WG will provide an appraisal of the affected property to the landowners. This will be the basis for their offer. The landowners have the right to obtain their own appraisal of their property. They will be compensated for the cost of this appraisal if the following conditions are met.

1. The appraisal must be submitted to WG within 60 days after the landowner receives the company's appraisal.

2. The appraisal fee must be reasonable.

3. The appraisal must be complete.

The amount of compensation is based on these appraisals and is established during the negotiation process between WG and the individual landowners. An appraisal is an estimate of fair market value. WG is required to provide landowners with information about their rights in this process before negotiations begin.
Landowners should keep in mind that any easement they sign with WG is an individual agreement. When considering whether or not to sign an easement agreement, landowners should examine the language it contains to make sure it contains all of the terms that the landowner and WG reached during negotiations including the language in the Agricultural Mitigation Pland and the Best Management Practices. The plan and practices are not binding on negotiations between landowners and WG. Landowners can choose to waive any or all of the rights and practices described in the AMP and BMPs. In addition, if landowners reach agreement with WG on specific requirements on their property, they should make sure that the agreements are reflected in their easement document.

If a landowner refuses to negotiate with the company, the company can then resort to condemnation proceedings. When eminent domain is used to purchase an easement by a pipeline company, Chapter 32.09 of the Wisconsin Statutes provides that the compensation paid for the easement is determined as the difference between the market value of the entire property of the landowner immediately before the date of evaluation and that of the remainder immediately after that date. This assumes that the pipeline construction is completed, the permanent or temporary loss of land is accounted for, and any damages to the remainder are also considered. The damages can include any impact that can be shown to influence market value of the easement-encumbered land in the view of buyers and sellers of similar properties. The landowners have the burden of proof to demonstrate the validity of these damages and their impacts on property values.

VII. SUMMARY AND RECOMMENDATIONS

The proposed pipeline project has the potential to significantly affect agricultural lands along either of the proposed routes. Route A is 86.4 miles long and would affect 312 acres of farmland. Route B is 89.2 miles long and would affect 303 acres of farmland. On

agricultural land, the proposed right-of-way would be 100 feet wide consisting of 50 feet of permanent easement and 50 feet of temporary easement.

Pipeline construction can adversely impact farmland through the following:

- mixing of topsoil and subsoil;
- compaction of topsoil and subsoil;
- mixing of fertile subsoil with underlying glacial material;
- long-term changes in field drainage due to the introduction of the underground pipeline channels;
- soil erosion;
- interference with surface and subsurface drainage, irrigation, fencing, and grazing; as well as flooding of fields to discharge excess trench water;
- the spread of diseases from parcel to parcel unless proper protocols are observed;
- interference with field operations from temporary access roads;
- migration of weeds from the pipeline right-of-way; and
- the rise of excess rocks to the surface interfering with farm machinery

To avoid or minimize agricultural impacts, Wisconsin Gas (WG) has prepared an Agricultural Mitigation Plan (AMP) and Best Management Practices (BMP's). These BMPs, which set forth detailed technical and performance standards for construction and restoration, are essential to the protection of agricultural land. However, the value of these BMP's can be realized only to the extent they are faithfully implemented during the construction and restoration process. The goal of the AMP and BMPs is to protect the agricultural resources and farmland owners along the route. However, nothing in the AMP or BMP's prevents landowners from negotiating stronger measures in their individual negotiations with WG. In addition, there may be areas of concern to landowners that are not addressed by the AMP or BMPs.

The role of the Agricultural Inspector is crucial in enforcing the AMP and BMPs; reporting incidents of noncompliance; recommending corrections when processes are being carried out in ways that violate the AMP or BMPs; and stopping the construction task when serious violations occur.

Following the completion of initial restoration, WG should respond to landowner concerns and take steps to mitigate observed problems in the field caused by the pipeline project.

Appendix I: Agricultural Impact Statements

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) is required to prepare an Agricultural Impact Statement (AIS) whenever more than five acres of land from at least one farm operation will be acquired for a public project if the agency acquiring the land has the authority to use eminent domain for the acquisition(s). The DATCP has the option to prepare an AIS for projects affecting five or fewer acres from each farm. An AIS would be prepared in such a case if the proposed project would have significant effects on a farm operation. The agency proposing the acquisition(s) is required to provide the DATCP with the details of the project and acquisition(s). After receiving the needed information, DATCP has 60 days to analyze the project's effects on farm operations, make recommendations about it and publish the AIS. DATCP will provide copies of the AIS to affected farmland owners, various state and local officials, local media and libraries, and any other individual or group who requests a copy. Thirty days after the date of publication, the proposing agency may begin negotiating with the landowner(s) for the property.

Section 32.035 of the *Wisconsin Statutes:* Agricultural impact statement.

(1) Definitions. In this section:
(a) "Department" means department of agriculture, trade and consumer protection.
(b) "Farm operation" means any activity conducted solely or primarily for the production of one or more agricultural commodities resulting from an agricultural use, as defined in s. 91.01 (1), for sale and home use, and customarily producing the commodities in sufficient quantity to be capable of contributing materially to the operator's support.
(2) EXCEPTION. This section shall not apply if an environmental impact statement under s. 1.11 is prepared for the proposed project and if the department submits the information required under this section as part of such statement or if the condemnation is for an easement for the purpose of constructing or operating an electric transmission line, except a high voltage transmission line as defined in s. 196.491(1)(f).
(3) PROCEDURE. The condemnor shall notify the department of any project involving the actual or potential exercise of the powers of eminent domain affecting a farm operation. If the condemnor is the department of natural resources, the notice required by this subsection shall be given at the time that permission of the senate and assembly committees on natural resources is sought under s. 23.09(2)(d) or 27.01(2)(a). To prepare an agricultural impact statement under this section, the department may require the condemnor to compile and submit information about an affected farm operation. The department shall charge the condemnor a fee approximating the actual costs of preparing the statement. The department may not publish the statement if the fee is not paid.

(4) IMPACT STATEMENT. (a) When an impact statement is required; permitted. The department shall prepare an agricultural impact statement for each project, except a project under ch. 81 or a project located entirely within the boundaries of a city or village, if the project involves the actual or potential exercise of the powers of eminent domain and if any interest in more than 5 acres from any farm operation may be taken. The department may prepare an agricultural impact statement on a project located entirely within the boundaries of a city or village or involving any interest in 5 or fewer acres of any farm operation if the condemnation would have a significant effect on any farm operation as a whole.

(b) *Contents*. The agricultural impact statement shall include:

1. A list of the acreage and description of all land lost to agricultural production and all other land with reduced productive capacity, whether or not the land is taken.

2. The department's analyses, conclusions and recommendations concerning the agricultural impact of the project.

(c) *Preparation time; publicatio*n. The department shall prepare the impact statement within 60 days of receiving the information requested from the condemnor under sub. (3). The department shall publish the statement upon receipt of the fee required under sub. (3).

(d) *Waiting period*. The condemnor may not negotiate with an owner or make a jurisdictional offer under this subchapter until 30 days after the impact statement is published.

(5) PUBLICATION. Upon completing the impact statement, the department shall distribute the impact statement to the following:

(a) The governor's office.

(b) The senate and assembly committees on agriculture and transportation.

(c) All local and regional units of government which have jurisdiction over the area affected by the project. The department shall request that each unit post the statement at the place normally used for public notice.

(d) Local and regional news media in the area affected.

(e) Public libraries in the area affected.

(f) Any individual, group, club or committee which has demonstrated an interest and has requested receipt of such information.

(g) The condemnor.

Appendix II
Agricultural Mitigation Plan
and
Best Management Practices

PSC REF#:182723

Public Service Commission of Wisconsin
RECEIVED: 03/28/13, 8:58:46 AM

WISCONSIN GAS LLC
AGRICULTURAL MITIGATION PLAN
WEST CENTRAL LATERAL

1. INTRODUCTION

Wisconsin Gas LLC ("Wisconsin Gas" or the "Company") proposes to construct a new gas lateral in West Central Wisconsin (Eau Claire, Jackson, Clark and Monroe Counties). The West Central Lateral Project (the "Project") would consist of new gas distribution facilities from a proposed interconnect with Viking in Eau Claire or Clark County and run south, including delivery points to the Company's existing distribution networks in the City of Augusta, Town of Hixton, City of Black River Falls, and finally the City of Tomah. The West Central Lateral is proposed to be in service by November 1, 2015.

The Company has a longstanding commitment to working with landowners who may be affected by construction of various utility projects throughout the State of Wisconsin. The Company has a vested interest in working with landowners within the project to ensure their satisfaction with utility project construction and post-construction restoration.

The Company continues to be committed to restoring construction areas to pre-construction conditions with all our construction projects. We believe this Agricultural Mitigation Plan (AMP) will help to assure this outcome within agricultural areas in the proposed gas main replacement corridor. The Company has prepared this AMP specifically to prevent or mitigate potential adverse impacts of the project on agricultural productivity, using construction and restoration procedures from other Company projects and modifying them as necessary.

2. PURPOSE

The purpose of this AMP is to:

- provide a description of effective agricultural construction mitigation and restoration methods to be used on the project;
- establish personalized communication with agricultural landowners to ensure their unique concerns are addressed;
- provide agricultural landowners and tenants with a hotline for convenient contact access to the Company Representative;
- describe the job duties of the Company Agricultural Inspector (AI);

3. PROJECT DESCRIPTION

There are two route alternatives under consideration and will be proposed to the Public Service Commission of Wisconsin ultimately for their review and selection of a route. The new pipe is proposed to extend from the Viking Town Border Station (TBS) to downstream district regulator stations (DR). Approximately 40 miles of 16-inch steel (Route A) or approximately 45 miles of 16-inch steel (Route B) will extend from the proposed Viking TBS to the proposed Black River Falls DR. Approximately 33.1 miles of 12-inch steel (Route A) or approximately 29.3 miles of 12-inch steel (Route B) will extend from the proposed Black River Falls DR to the proposed Tomah DR. In addition to the 16" and 12" steel pipe, there will also be smaller diameter branches at the same pressure extending to the proposed Augusta

DR, the proposed Hixton DR, and the proposed Warrens DR. The proposed Augusta branch consists of approximately 7 miles of 6-inch steel for Route A and approximately 9.8 miles of 6-inch steel for Route B. The proposed Hixton branch consists of approximately 3 miles of 4-inch steel for Route A and approximately 2.1miles of 4-inch steel for Route B. The proposed Warrens branch consists of approximately 0.9 miles of 4-inch steel for both Route A and Route B.

There is also several distribution main improvement projects required downstream of the proposed DR's to supply the existing distribution systems fully from Viking if desired. They are listed below:

- Augusta Distribution - Extension of approximately 1.9 miles of 8" plastic pipe with an MAOP and design pressure of 60 psig from the proposed Augusta DR to the existing Augusta 60 psig distribution system.
- Alma Distribution – Extension of approximately 0.3 miles of 6" steel pipe with an MAOP and design pressure of 275 psig from the proposed Alma DR for Route A to the existing Alma 275 psig distribution system.
- Black River Falls Distribution – Extension of approximately 1.9 miles of 8" plastic pipe with an MAOP and design pressure of 60 psig from the proposed Black River Falls DR to the existing Black River Falls 60 psig distribution system.
- Tomah Distribution – Extension of approximately 0.2 miles of 12" steel with an MAOP and design pressure of 60 psig from the proposed Tomah DR to the existing Tomah 60 psig distribution system.

4. SOILS

The soils in the project area in Eau Claire and Clark Counties are dominated by three series, Ludington, Humbird, and Elm Lake series; which consist of moderately deep, poorly to moderately well drained soils formed in siliceous sandy alluvium, loamy residuum, and clayey residuum, from the underlying sandstone and shale on pediments . The project area in Jackson County is dominated by four series, Toddville, Bertrand, Tarr, and Rockdam series; which consist of very deep, moderately well to excessively drained soils. Toddville and Bertrand soils are formed in silty and sandy alluvium on lake terraces and stream terraces in river valleys. Tarr and Rockdam soils are formed in siliceous sandy pedisediment or sandy alluvium overlying sandy residuum on stream terraces, hills, and pediments. The project area in Monroe is dominated by one series, Downs series; which consists of very deep, well drained soils formed in loess on interfluves and side slopes on uplands and treads and risers on stream terraces.

Ludington soils, which may typically be described as Ludington sand, are found on pediments. Slopes range from 1 to 20 percent. These soils formed in siliceous sandy alluvium and loamy residuum and are moderately well drained. Permeability ranges from rapid to very rapid within the sandy alluvium, to moderately slow in the loamy residuum, to very slow in the sandstone and shale. Soils have a medium or rapid rate of surface runoff, with a relatively short period of saturation. Most areas of this soil are used for woodland, second growth forests with northern pin oak, jack pine, red maple and paper birch being common. Some areas are also used for cropland, and others areas are planted to pine trees.

Humbird soils, which may typically be described as Humbird fine loamy sand, are found on pediments. Slopes range from 1 to 20 percent. These soils formed in loamy alluvium and clayey residuum from

underlain by interbedded sandstone and shale. The soils are moderately well drained. Permeability ranges from moderate to moderately rapid in the loamy mantle, to slow in the clayey residuum, and very slow to slow in the sandstone and shale. These soils have surface runoff that is medium to rapid, and a perched seasonal high water table at a depth of 1.5 to 3 feet for 1 or more months per year in at least 6 out of 10 years. Most areas of this soil are used for woodland, and are most commonly in second growth forests dominated by oak and aspen. The native vegetation is mixed deciduous and coniferous forest with northern red oak, red maple, jack pine, northern pin oak and quaking aspen. Some areas are cleared and used for cropland and others pastureland.

Elm Lake soils, which may typically be described as Elm Lake muck, are found on pediments. Slopes range from 0 to 2 percent. These soils formed in siliceous sandy alluvium overlying loamy residuum from the interbedded sandstone and shale underlying below and are poorly drained. Permeability is rapid to very rapid. Surface runoff is very slow or ponded with a perched seasonal high water table at 1 foot above to 1 foot below the surface, most of the time from September to June in most years. Most of the areas are in woodland with common trees being red maple, quaking aspen, black ash and paper birch. Some areas are also used for pastureland.

Toddville soils, which may typically be described as Toddville silt loam, are found on treads and risers on stream terraces in river valleys. Slopes range from 0 to 6 percent. They are formed in up to 150 centimeters of loess or silty alluvium and in the underlying stratified alluvium and are moderately well drained. The soils are frequently saturated between depths of 1 and 1.8 meters during the wettest times of the year when precipitation levels are normal. Most of the areas are in cropland. The native vegetation is big bluestem, little bluestem, switch grass, other tall prairie grasses, and scattered oak and hickory trees.

Bertrand soils, which may typically be described as a Bertrand silt loam, are found on stream terraces and lake terraces. Slopes range from 0 to 35 percent. The soils formed in silty alluvium, underlain by stratified sandy alluvium and are well drained. Permeability ranges from moderate in the silty and loamy alluvium, and rapid in the sandy alluvium. Runoff is slow to rapid. Most areas are in cropland, common crops consisting of corn, small grain, and hay. Some areas are in pastureland and woodland. Native vegetation is mixed hardwood with common tree species being northern red oak, white oak, black oak, white ash, black walnut and quaking aspen.

Tarr soils, which may typically be described as Tarr sand, are found on stream terraces, hills, and pediments. Slopes range from 0 to 60 percent. Soils are formed in siliceous sandy pedisediment with underlying siliceous sandy residuum from sandstone and are excessively drained. Permeability is rapid. Surface runoff is slow to very rapid. Most areas are either woodland or idle land. Some areas are used for cropland, and other areas are irrigated to grow specialty crops such as potatoes, sweet corn, and snap beans.

Rockdam soils, which may typically be described as Rockdam sand, are on pediments and stream terraces. Slopes range from 0 to 3 percent. These soils are formed in siliceous sandy alluvium or residuum. Permeability is rapid to very rapid. Surface runoff is slow. These soils have a seasonal high water table at a depth of 3.5 to 6 feet for one month or more per year in at least 6 out of 10 years. Most areas are in woodland. Native vegetation is mixed deciduous and coniferous forest with a somewhat grassy understory. Common trees are jack pine, northern pin oak, and eastern white pine. Some areas are used for cropland and pastureland.

Downs soils, which may typically be described as Downs silt loam, are on interfluves and side slopes on uplands and treads and risers on stream terraces. The slope ranges from 0 to 35 percent. These soils are formed in loess and are well drained. Surface runoff ranges from negligible to high. Frequent saturation does not occur within a depth of 1.8 meters during the wettest periods in normal years. The slighter sloped areas are used for cropland, while the steeper slopes are pastureland, woodland, or both. The native vegetation consists of big bluestem, little bluestem, switchgrass, and other tall grass prairie species and scattered oak and hickory trees.

Several other series occur at a much lesser extent and are typically comprised of sand, sandy loam, and silt loam and are shallow to moderately deep to a paralithic contact with interbedded sandstone and shale. These soils range from somewhat poorly drained to excessively drained. Most of these soils are in woodland and cropland. Most of the woodlands are comprised of mixed deciduous and coniferous forests with common species consisting of northern pin oak, black oak, jack pine, eastern white pine.

5. SCOPE OF AGRICULTURAL MITIGATION

This AMP applies to those activities occurring on agricultural lands (tilled land row crops). “Agricultural land” as used here is understood to include rotated pastureland (except permanent pasture), all presently cultivated land including cropland, haylands, truck gardens, specialty crops, and land in government agricultural set-aside programs.

“Permanent pasture” as used here includes land devoted exclusively to pasture use, and not suited to tillage or crop rotation, as determined by the lack of any sustained crop history. “Construction area(s)” as used here includes all permanent or temporary workspace areas to be used by the Company for the purpose of constructing and operating the project, as well as lands on which aboveground facilities or other appurtenances related to the project will be located.

6. AGRICULTURAL INSPECTOR ROLE AND QUALIFICATIONS

The Company will have a project Construction Manager (“CM”) and an Environmental Manager (“EM”) for the project. To assist with on-site inspection and monitoring, the Company will hire an Agricultural Inspector (“AI”) for the Project.

The AI will be a qualified individual that will monitor the implementation of the AMP. The AI will have familiarity with agricultural operations and general construction, as well as knowledge in regards to agronomy and soil conservation. The AI will report directly to the EM and .

The AI will be thoroughly familiar with the following:

- West Central Lateral Agricultural Mitigation Plan;
- gas lateral construction sequences and processes;

They also will:

- be familiar with techniques of soil conservation;
- be familiar with agricultural operations;
- possess good oral and written communication skills; and
- be able to work closely with the agricultural landowners, tenants and applicable agencies.

Contractors will be required to structure their construction activities to be consistent with the AMP.

7. AGRICULTURAL MITIGATION: PLANNING AND PRE CONSTRUCTION PHASE

The Company will communicate as needed with affected landowners and tenants of agricultural land to keep them informed of overall progress, explain mitigation actions, and to learn of any additional problems noted by landowners. No later than 30 days prior to the start of construction, the Company will provide landowners with a telephone number and address that can be used to contact the Company (also known as the Hotline Number). The phone number will include provisions for taking calls on evenings and weekends by use of an answering machine or voicemail system. The Company will respond promptly to calls or correspondence from landowners or tenants along the utility easement and/or right-of-way. Where the Company needs to consult or obtain concurrence from both the landowner and tenant of a property, they will make a good faith effort to do so. In the event, there is a disagreement between landowner and tenant with regards to a decision, the Company's obligation will be satisfied by securing agreement with the landowner.

The Company will provide notice of any permanent changes in the status or use of agricultural lands to WDATCP at least 60 days prior to the beginning of construction.

The Company will develop training and implementation plans prior to construction.

At least 90 days prior to construction, the Company will provide WDATCP with available information collected for the Project Corridor on:

- Areas of cropland, pasture and specialty crops, including orchards, and fields with irrigation systems.
- Location of valve sites, meter and regulating stations, and other aboveground facilities, if any.
- Location of any known temporary access roads and laydown/storage areas. If additional areas are required for temporary construction use. To the extent practicable, the Company will identify suitable areas and provide this information to WDATCP prior to construction.
- This information will be provided with the understanding that locations of some facilities or their locations may be altered at a later date based on site specific conditions used at the site.

The Company will work with landowners to ascertain existing agricultural operations that may require special attention, such as conservation practices, location of above and below ground structures or obstructions, such as drain tile, irrigation systems, fencing, livestock, certified organic lands, proposed new drainage systems or other farm technology.

During the pre-construction phase, the Company will:

- Contact each landowner to obtain property specific information (such as drain tiles, conservation practices, etc.) to ensure these structures/ operation practices are noted on construction documents;
- review agricultural related project documents such as descriptions or maps of leased lands, permits, draft construction alignment sheets, and relevant plans prior to construction; and
- review information supplied by affected farm operators, conservation districts, agricultural extension agents, and others;
- educate construction crews through an environmental training session, to ensure they are familiar with AMP, agricultural concerns and issues that may occur;

- Negotiate with the farmland owner/operators to avoid the spreading manure over all areas within the proposed construction area prior to construction.

If any construction activities occur on a Certified Organic Farm, the Company will work with the landowner or tenant, the landowner and/or tenant's certifying agent to identify site-specific construction practices that will minimize the potential for decertification as a result of construction activities. Possible practices may include: surveying/staking methods prior to construction (specifically non paint methods), equipment cleaning, use of drop cloths during welding and coating activities; removal and storage of additional topsoil; planting a deep-rooted cover crop in lieu of mechanical decompaction; applications of composted manure; or similar measures. The Company recognizes that Organic System Plans are proprietary in nature and will respect the need for confidentiality.

8. AGRICULTURAL MITIGATION: CONSTRUCTION AND RESTORATION PHASE

During construction and restoration, the AI's role is to monitor the implementation of the Company AMP to avoid negative impacts to agricultural lands by advising the appropriate Company representative, either the EM or the CM, in the event incorrect construction methods are being used. The AI will generally be present on-site during construction, and will have access to all work areas in agricultural lands. The AI will travel between various construction activities in agricultural lands and spotcheck construction operations. If the AI discovers actions that do not appear to meet the AMP requirements, he may stop-work at that location if necessary and will immediately contact the EM or the CM who will determine if site-specific restoration action is necessary. They will also ensure that the erring contractors are trained in the appropriate construction methods.

In the event adverse weather conditions cause soil conditions to become unfavorable for construction or restoration activities at a given site, the AI will consult with the EM or the CM to temporarily halt activity at that location and will confer with them as to when activities should be resumed at the site.

9. AGRICULTURAL MITIGATION: CROP COMPENSATION

The Company will compensate the landowner for crop loss; compensation will be based on crop prices and yields for the County at the time of construction. Crop loss will occur during the construction of the project, which, depending on the timing of construction activities, may include one or two growing seasons. Payments will be made to landowners as soon as possible after construction is completed.

If the landowner rents or leases out the land to a tenant farmer (renter), then the renter will be compensated in lieu of the landowner.

10. BEST CONSTRUCTION MANAGEMENT PRACTICES (BMPs)

The Company require those working on the project to research, plan, implement, monitor, and assure the proposed results are obtained. The Company relies on these methods to identify agricultural concerns and implement measures to maintain agricultural productivity throughout construction and restoration. Appropriate use of these measures are assured by key field personnel such as the AI and the Company EM, CM, and Construction Inspector (CI). Additionally, the Company seeks to only use contractors with a consistent favorable history of installing and maintaining measures according to the BMPs. Thus, permit conditions, landowner satisfaction, and natural resources are preserved. The Company will incorporate the applicable provisions of this AMP and accompanying BMPs into all bid documents and contracts with each contractor retained on this project by the Company for

construction, restoration, mitigation or post-restoration monitoring. Each contractor retained by the Company for the project must also incorporate the applicable provisions of the AMP into their contracts with each subcontractor on the project.

The Company utilizes construction techniques within agricultural areas that will insure future agricultural productivity. The following construction methods are to be utilized in agricultural areas:

a. Topsoil Segregation

During construction of the gas main, topsoil will be removed from the construction area and stockpiled separately from any other excavated soils. This will preserve the topsoil resource by eliminating the potential for topsoil/subsoil mixing. Topsoil is defined to include the upper most portion of the soil commonly referred to as the plow layer, the A horizon, or its equivalent in uncultivated soils. It is the surface layer of the soil that has the darkest color or the highest content of organic matter. All of the topsoil to a depth of 12 inches, or the entire original topsoil depth if it is less than 12 inches, will be removed from excavated areas; however, topsoil will not be removed from under the topsoil storage piles. The Company has the option to remove amounts of topsoil in excess of 12" at its discretion.

The gas main will be installed via open cut trench, "plow" method and directional boring. The plow method of installation consists of using a vibratory plow which slices the soil open, allows installation of the pipe into the trench, then replaces the soil into its original location. The horizontal directional bore method consists of pipe installation using an auger to drill an underground tunnel, into which the pipe is drawing. The plow and bore method do not disturb the soil horizons. Open cut trenching will require separation of top and sub soils during excavation. For all excavations, top and sub soils will be replaced in their original soil horizons when backfilling. Landowners will be asked to refrain from manure spreading prior to topsoil removal. Erosion control measures will be used as necessary.

b. Temporary Access Road

The Company will attempt to utilize existing farm roads for access to and from the ROW where possible. In places where temporary access roads are constructed over agricultural land, topsoil will be stripped and temporarily stockpiled. If the temporary roads in agricultural lands require gravel stabilization, geo textile construction fabric will be placed below imported rock material for additional stability and to provide a distinct barrier between imported rock material and the subsoil surface.

Temporary roads will be designed to accommodate existing surface drainage patterns and to minimize soil erosion. During the restoration phase, both temporary and pre-existing access roads will be removed and the areas will be restored as close as reasonably possible to its pre-construction conditions. In the event the landowner wants the road left intact, a written mutual agreement between the Landowner and the Company will be established.

c. Clearing of Brush and Trees from the Easement

The Company will work with each landowner for the cutting of merchantable timber necessary for construction of the gas distribution system. Timber may be cut and left along the edge of the utility ROW for the landowner's use or disposed of in various methods. Methods of disposal of trees, brush and stumps may include off-site burning, burial, chipping, or removal. Vegetation

from cherry and walnut trees can be toxic to livestock. All debris from these trees will be removed from areas that are actively pastured such that it will not be allowed to come into contact with livestock and may not be stockpiled on site.

d. Fencing

Prior to construction The Company will work with landowners to determine if fences may be in the way of access for construction equipment. If necessary, existing fences may be removed and temporary fencing will be installed. Wire tension on temporary fences must be adequate to prevent sagging. Bracing of fences to trees or vegetation is prohibited. Fence materials, such as paint, must not be used as it is toxic to livestock.

Where livestock graze adjacent lands to construction areas, arrangements will be made with the landowner prior to construction to determine if temporary fences are necessary. The Company's contractors will be responsible to close any gates as used throughout the workday.

Existing fence crossings removed due to construction activities will be repaired. Following construction, any temporary gates and fences installed for use by construction crews must be removed, unless the landowner approves otherwise. Permanent fences will be restored as closely as reasonably possible to their pre-construction condition.

e. Irrigation Systems

If project construction intersects an operational irrigation system on agricultural land, The Company and the landowner will establish a mutually acceptable amount of time that the affected irrigation systems may be taken out of service during construction. Water flow in irrigation systems on agricultural land is not to be disrupted by construction without first notifying affected landowners. Any damage to an irrigation system caused by construction will be repaired as soon as reasonably possible.

f. Erosion Control and Dewatering

Erosion controls such as silt fence, staked hay bales, and erosion matting will be used to prevent surface runoff from carrying sediment laden water onto adjacent lands. Dewatering may be required to remove standing water from trench or bore pit areas. Erosion control and dewatering technical standards are described on the Wisconsin Department of Natural Resources website (http://dnr.wi.gov/topic/stormwater/standards/). These standards will be met or exceeded at all times. It is not permissible to allow soil or water runoff to occur from non-organically farmed fields onto organically farmed fields at any time even if both fields are owned by the same landowner.

g. Drain Tile

The Company will work with each Landowner through the pre-construction process to determine location of known drain tiles. If a drain tile is damaged or severed in the course of construction, the tile will be repaired. A temporary repair with solid tubing to allow drainage while construction activities are completed may be used, or a permanent repair immediately installed.

Prior to backfilling soils at that location, the drain tile will be permanently repaired. Repairs may include support of the tile to maintain proper drainage gradient, replacement of tile and

placement of subsoils free of large rocks and clumps around the tile to cushion it, and/or placement of filter cloths. Each repair will be documented to show proper actions have been taken to ensure future drainage and GPS coordinates of the repair location recorded.

h. Weed Control

Where the AI sees evidence that weed growth on stockpiled topsoil could present a problem to adjacent cultivated fields the AI will consult with the Company Representative to have the weeds removed or killed prior to topsoil replacement. If the Company chooses to spray the topsoil pile with herbicide, the landowner will be consulted in regard to the choice of herbicide to be used, taking into account their preference for cover crop and plans for the next year's crop. If any herbicide spraying is completed, it will be done by a state licensed applicator.

i. Repair of Existing Agricultural Erosion Control Facilities

Existing agricultural facilities such as diversion terraces, grassed or lined waterways, outlet ditches, water and sediment control basins, vegetated filter strips, etc. damaged due to construction activities will be restored to pre-construction conditions. Photographs and elevation surveys may be taken as necessary prior to construction activities at the site to ensure final restoration is satisfactory.

j. Soil Restoration

The purpose of soil restoration is to ensure that soil strata are replaced in the proper order, decompacted, and that rock content of the upper 24 inches of soil is not increased. The Company will discuss rock and excess soil disposal with the landowner to determine acceptable disposal location(s) on the property. Heavy equipment will not be allowed to cross those agricultural areas that have been decompacted and restored.

<u>De-compacting the Subsoil:</u>

De-compaction of the subsoil will only be done when the subsoil condition is friable/tillable in the top 18 inches of the subsoil profile, using the Atterbeg Field Test as guidance (Attachment A). The AI may recommend to the Company specific locations for the decompaction of the subsoil in locations where soils appear to be either predominantly wet or in low lying areas where water ponding has occurred due to the "trench effect" as a result of topsoil removal. In these cases, the Company may consult with the landowner to determine the appropriate decompaction needs.

Equipment that can be used for soil decompaction may include a v-ripper, chisel plow, paraplow, or equivalent. Typical spacing of the shanks varies with equipment but is typically in the 8 - 24 inch range. The normal depth of tillage is 18 inches. The type of equipment used and the depth of rip may be adjusted as appropriate for different soil types or for a deeply and severely compacted area.

Subsoil compaction will normally be alleviated with three passes of the decompaction equipment. Multiple passes refers to the implement passing over the same soil band. That is, three passes of a 10 foot wide implement will treat a 10 foot wide band of soil, not a 30 foot wide band. Passes must be made in multiple directions. This can be achieved in the narrow areas by having the implement weave back and forth across the area being ripped.

Topsoil Replacement:
The topsoil will be replaced to its original depth across the spoil storage, trench, work, and traffic areas. The layer of replaced topsoil should be uniform across the right-of-way width, including any crowning. Topsoil should be replaced with wide tracked machinery or equivalent light loaded equipment to avoid compaction of the topsoil and subsoil layers. Rubber tired motor graders may be used to spread and level topsoil to address unevenness in the field. In areas where minimal tillage, no-till, or level land farming practices are employed, a tracked machine will be required to establish final grades.

De-compacting Through the Topsoil:
De-compaction through the topsoil may be necessary, if the subsoil and/or topsoil are compacted during topsoil replacement activities. A penetrometer will be used to determine if additional decompaction is necessary through the topsoil.

Final Rock Removal:
Replacing the topsoil (or de-compacting through the topsoil) may free some rocks and bring them to the surface. The size, density and distribution of rock remaining on the construction work area should be the same as adjacent areas not disturbed by construction.

Final Cleanup:
All previously restored construction area should not be traversed by unnecessary equipment traffic. All construction related debris, including litter generated by the construction crews, will be removed from the landowner's property and disposed of appropriately. Final clean-up begins immediately after all the other above-mentioned sequence of restoration activities operations are completed, and not before. Final clean-up includes installation of permanent erosion control measures if necessary and disposal of construction debris and will be completed as soon as practicably possible (weather permitting), or as soon as possible thereafter. If final clean-up is delayed, temporary erosion controls will be installed as necessary.

ATTACHMENT A

Purpose: To determine when soil is suitable for tillage operations.

Process: The Environmental Inspector will determine the soil's consistency using the following:

1. Pull a sample soil plug at the maximum depth to be tilled, or from within the topsoil pile.

2. Roll a portion of the sample between the palms of the hands to form a wire with a diameter of one-eighth inch.

3. The soil consistency is:
    a. Tillable if the soil wire breaks into segments not exceeding 3/8 of an inch in length.
    b. Plastic (not tillable) if the segments are longer than 3/8 of an inch before breaking.

4. This procedure is to be used prior to decompacting the subsoil; on the topsoil pile prior to stripping and stockpiling; on the topsoil prior to replacement; and prior to decompacting through the topsoil.

5. One determination of soil consistency is adequate until the next rain event.

WISCONSIN GAS WEST CENTRAL LATERAL PROJECT
Best Management Practices for Construction within Agricultural Lands
BMP 01 - Right-of-Way Width

Purpose: To define the locations and limits of rights-of-way and additional temporary workspaces, in order to minimize the impacts to agricultural lands.

Organization: WISCONSIN GAS onsite construction inspection personnel will monitor and enforce the measures described, in concert with the Agricultural Inspector (AI), for pipeline construction operations within agricultural lands.

Installation Planning

1. WISCONSIN GAS will determine the required right-of-way widths over the length of lands traversed by the pipeline, including extra workspaces.
2. WISCONSIN GAS will show the specific limits of rights-of-way on alignment sheet drawings which will be provided to the construction contractor, environmental consultants and inspection personnel.
3. WISCONSIN GAS will provide the construction contractor, environmental consultants and inspection personnel with the right-of-way configuration drawings and other figures referred to by the BMPs developed for the project.
4. WISCONSIN GAS will obtain the appropriate environmental and right-of-way clearances prior to entry on any land affected by construction of the pipeline, or notify all parties of areas of special concern or areas for which clearance is withheld.

Construction

1. The limits of the right-of-way and all additional temporary workspaces will be staked prior to work commencing at that location.
2. For Construction Easements in Agriculture Lands a right-of-way width of 100 foot is required and topsoil stripping will be the complete right-of-way width excluding the topsoil stockpile area. This consists of a 50 foot temporary construction easement and a 50 foot permanent easement. The running centerline of the pipeline will generally be 15' from one side of the 50 foot permanent easement. See Construction Figures, Detail 27.
3. For Construction Easements in non-cultivated Wooded Lands or Wetlands a right-of-way width of 75 feet is required. This consists of a 25 foot temporary construction easement and a 50 foot permanent easement. Where feasible existing corridors are being utilized to reduce the impact of tree clearing. In areas where the gas main will be installed by horizontal directional drilling a 50 foot permanent easement will be required but the 25 foot temporary easement will not be necessary.
4. Additional temporary workspace will be required for stream crossings, road bore crossing areas, uplands on either side of wetlands, and equipment turnaround areas. WISCONSIN GAS will determine the amount of additional right-of-way needed for construction and restoration on agricultural land as per these BMPs.
5. Should a situation arise where the approved workspace is not adequate to implement the agricultural BMPs, work will be stopped at the respective location until WISCONSIN GAS determines an appropriate course of action. For example, triple lift soil segregation may require an additional 25 feet in the temporary construction easement as necessary to allow separation of the three stockpile areas.

WISCONSIN GAS WEST CENTRAL LATERAL PROJECT
Best Management Practices for Construction within Agricultural Lands

BMP 02 - Topsoil Segregation

Purpose: To preserve the topsoil resources by eliminating the potential for topsoil / subsoil mixing in agricultural lands.

Installation Planning

1. During right-of-way negotiations for easements on agricultural lands, WISCONSIN GAS will identify full topsoil removal as the only alternative.

2. The topsoil is defined to include the upper most portion of the soil commonly referred to as the plow layer, the A horizon, or its equivalent in uncultivated soils. It is the surface layer of the soil that has the darkest color or the highest content of organic matter.

Construction

Full Topsoil Removal

1. The WISCONSIN GAS operator or construction contractor will oversee determination of the topsoil depth. This will be completed as construction progresses.
2. All of the topsoil to a depth of 12 inches, or the entire original topsoil depth if it is less than 12 inches, will be removed from the subsoil storage area, the trench area, and the rest of the temporary right-of-way (work and traffic areas); however, topsoil will not be removed from under the topsoil storage piles or areas where construction mats are laid on the surface for material storage or equipment travel. WISCONSIN GAS has the option to remove amounts of topsoil in excess of 12" at its discretion.
3. All subsoil material removed from the pipeline trench will be stockpiled separate from the topsoil stockpile. The subsoil material will be stockpiled in the subsoil storage area.
4. Additionally, all topsoil to a depth of 12-inches will be stripped from newly constructed temporary access roads, temporary storage areas, and temporary construction areas associated with stations, mainline valves, and pig launchers located on agricultural land. It is intended that existing field access roads will not be stripped of any existing cover.
5. Topsoil will be removed prior to cut/fill grading operations.

Partial Topsoil Removal

1. There will be no Partial Topsoil Removal on agricultural lands.

WISCONSIN GAS WEST CENTRAL LATERAL PROJECT
Best Management Practices for Construction within Agricultural Lands
BMP 03 - Erosion Control

Purpose: To minimize the effects of erosion to lands affected by construction, and adjacent properties, and to prevent silts and sediments from being transported off the right-of-way or into natural resources.

Installation Planning

1. WISCONSIN GAS will conduct training of inspection personnel and contractors to ensure all parties have a thorough understanding of the erosion control requirements to be utilized on the project. The training will include a review of the requirements of WISCONSIN GAS West Central Lateral Project Construction Diagrams AMP, and BMPs. Such training will identify the authorities of the inspection personnel, the criteria for placement of the particular erosion structures, and the procedure to be followed in the event that a violation of these practices appears to have occurred.

2. WISCONSIN GAS will advise the construction contractor of all known areas of special concern.

3. WISCONSIN GAS will require its construction contractor to structure its work in a manner that is consistent with the requirements of the documents listed in Paragraph 1 above, and to maintain an adequate supply of approved erosion control materials necessary for providing an appropriate level of control.

Construction

Temporary Erosion Control

1. Temporary erosion controls will be constructed after initial disturbance of the soil, and will be properly maintained throughout construction. The erosion control structures will be inspected as described below and reinstalled as necessary (such as after backfilling of the trench) until they are either replaced by permanent erosion controls or restoration is complete.

2. Temporary slope breakers will be constructed where necessary to reduce runoff velocity and divert water off of the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, sand bags, or wattles.

3. Unless otherwise specified as a permit condition, temporary slope breakers will generally be installed using the following spacing:

Slope %	Spacing (feet)
5 - 15	300
>15 - 30	200
>30	100

4. The outfall of each temporary slope breaker will be directed off the construction right-of-way to a stable, well-vegetated area or energy-dissipating device at the end of the slope breaker and off the construction right-of-way. Discharge of water shall not be made in a way that can runoff from non-organic farm operations onto adjacent organic farm operations.

5. The integrity of slope breakers will be confirmed, during active construction on a daily basis and during inactive construction on a weekly basis. In areas with no construction or equipment operation, integrity of slope breakers will be confirmed within 24 hours of each 0.5-inch of rainfall. Slope breakers found to be ineffective will be repaired within 24 hours of identification.

6. The placement of temporary slope breakers will be coordinated with the placement of trench/ditch plugs. Trench/ditch plugs will be installed at the boundaries of certified organic farming to ensure that the pipeline does not provide a surface or subsurface drainage path from the surrounding area to the certified organic farm during construction.

7. Slope breakers will be of adequate height and width to contain and divert a significant rain event. Additionally, slope breakers will be constructed with a two to eight percent outslope to a stable area. In the absence of a stable area, appropriate energy-dissipating devices will be used to direct the flow off of the construction right-of-way. The slope breaker will be compacted during its construction to prevent the water from eroding through the berm. The inlet end of the berm will be located to prevent water from traveling around the berm.

8. The outlet of the slope breaker will be stable enough to filter sediment from the water and retain the sediment within the existing vegetation.

Sediment Barriers

1. Sediment barriers will be installed to stop the flow of sediment. They may be constructed of materials such as silt fence, staked hay or straw bales, sand bags, wattles, or equivalent.

2. Temporary sediment barriers will be installed at the base of slopes adjacent to road crossings until disturbed vegetation has been reestablished and at appropriate locations to prevent siltation into water bodies or wetlands crossed by, or near, the construction work area.

3. Temporary sediment barriers will be maintained until permanent revegetation measures are successful or the upland areas adjacent to wetlands, water bodies, or roads are stabilized. Temporary sediment barriers will be removed from an area when that area is successfully restored

Mulch

1. In general, mulch will not be used as an erosion control measure in agricultural lands. In the event mulch is required by WISCONSIN GAS in consultation with the landowner in agricultural lands, the mulch will be applied according to We-Energies Erosion Control Standards and Procedures.

Permanent Erosion Control Devices

1. To prevent subsurface flow of water through the pipe trench, trench breakers will be installed.

2. The following reference table can be used to locate trench breaker spacing on areas with slopes greater than 5%.

Slope (%)	**Spacing Recommendations (feet)**
5 – 15	300
>15 - 30	200
> 30	100

3. When permanent trench breakers are installed in the trench prior to backfilling, they will consist of sandbags, earth-filled sacks or other approved material. Topsoil will not be used for trench breakers. Trench breakers are required to have a minimum bottom width of two sacks wide.

4. Trench breakers will be installed to a minimum elevation of one-foot above the top of the pipe. The top of the trench breaker must be two feet or more below the restored surface on agricultural land.

WISCONSIN GAS WEST CENTRAL LATERAL PROJECT
Best Management Practices for Construction within Agricultural Lands

BMP 04 - Drain Tile

Purpose: To ensure that any tile line damaged during construction is repaired to a condition that is functionally equivalent to its condition prior to construction and to avoid adverse impacts to planned or proposed drainage systems.

Installation Planning

1. Identify fields containing drain tiles through contact with landowners, the local Land Conservation District, and the USDA-Natural Resources Conservation Service staff. All drain tiles will be photographed and GPS documented pre-construction and post-construction.

2. Flag all identified drain tiles within the right-of-way after clearing and grading, and prior to trenching.

3. WISCONSIN GAS will document proposed drain tile plans that the landowner may plan to install within the three years following construction.

4. WISCONSIN GAS will identify local drain tile installation contractors and consult with the landowner to determine whether the landowner would prefer repair/replacement services (if necessary) be provided by a local contractor.

5. WISCONSIN GAS will document existing moisture content.

Construction

1. The excavated pipeline trench shall provide a minimum of 12 inches clearance, where practicable, between the pipe and the drainage tile.

General Conditions

1. WISCONSIN GAS will use the construction contractor or their sub-contractor to replace, relocate or reconfigure existing tile lines as may be required.

2. WISCONSIN GAS will take the necessary actions to ensure the functioning of the tile lines will be equivalent to its prior condition where tile lines adjacent to the pipeline's right-of-way are adversely affected by the construction of the pipeline. This may include the relocation, reconfiguration, and replacement of the existing tile lines within the construction corridor. The repaired drain tile will be verified that it was installed correctly and WISCONSIN GAS will make an effort to understand the existing conditions within the limited pipeline ROW.

3. The quality of all clay and concrete drain tile and corrugated polyethylene tubing to be installed shall be appropriate for the work as determined by the AI and/or qualified drain tile repair contractor. Material to be installed will meet American Society of Testing Materials (ASTM) standards.

4. Any drain tile removed from the pipeline trench will not be reused.

5. WISCONSIN GAS will repair or correct tile or drainage problems caused by construction of the pipeline immediately, upon written notice from the landowner to WISCONSIN GAS of such a problem, unless WISCONSIN GAS can demonstrate that the problem identified by the landowner was not caused by actions performed during such construction or restoration. WISCONSIN GAS may arrange a pay settlement to the landowner.

Locating Damaged Drains

1. All drains found during trenching will be flagged.

2. Drains that are located within the right-of-way, but are not located within the trench, will be probed (examined) for damage.

Temporary Repairs

1. All exposed tiles will be capped or screened with window screen or equivalent to protect against soil intrusion when the trench is dug, whether repaired immediately or later.

2. Any flowing tile line will be repaired as soon as practicable with solid tubing, until permanent repairs can be made.

3. Temporary repairs are needed if a flowing drain will be stopped for longer than 24 hours.

Permanent Repairs

1. All permanent tile line damaged within the trench area will be repaired prior to backfilling at the respective location.

2. Where tile lines are severed by construction of the pipeline trench, angle iron, three-sided steel channel iron, I-beams, full round slotted pipe, perforated plastic pipe or half pipe will be used to support the repaired tile line. The support members must extend a minimum of 2-feet into previously undisturbed soil. If the tile repairs involve clay tile, the support member will extend to the first tile joint beyond the minimum 2-foot distance.

3. Each tile drain's slope (gradient) will be maintained by providing sufficient support to prevent the drain line from sagging. Sandbags, bags of concrete, Sakrete, or equivalent can be used as support under repaired tile lines. The grade of the tile line should remain unchanged.

4. If the tile is clay, ceramic or concrete, any connection with new material must be made with commercially available connectors, or wrapped with plastic or effectively sealed to prevent soil intrusion.

5. To avoid the risk of damaging (crushing) the tile lines with large soil clumps or stones during backfilling loosened native subsoil free of large soil clumps and stones should be placed on top of, and to the sides of, the tile line. Where appropriate native subsoil is not available, imported subsoil free of clumps and stones, or pea gravel, can be used to cushion the tile line.

6. Filter-covered drain tiles will be used where the existing tile line is covered with a filter.

WISCONSIN GAS WEST CENTRAL LATERAL PROJECT
Best Management Practices for Construction within Agricultural Lands
BMP 05 - Trench Dewatering

Purpose: Pump water from an open trench or other excavated area while controlling the rate of discharge to avoid:

- Permanent or temporary erosion and scour;
- Damage to adjacent agricultural land, crops, or pastureland;
- Inundating crops for more than 24 hours, including rainfall;
- Depositing sand, silt, or sediment in or near a wetland or waterbody;
- Depositing gravel in fields, pastures, or watercourses; and
- Damaging cultural resources sites, locations of sensitive plant species and organic farming operations.

Typically, the trench will need to be dewatered for purposes of, but not limited to, tie-ins, measuring the trench for bends, lowering-in pipe, trench inspection, and back-filling the trench. Water discharge from hydrostatic testing following backfilling shall follow the same protocols described here when applicable.

Installation Planning

1. Water will be discharged in an upland area so any sediment, stones, and silt-laden water will not deposit material in a sensitive area adversely impacting the hydrology or plant communities. The contractor should have sufficient intake or outlet hose (250 - 350 feet) to reach the nearest appropriate upland area.

2. WISCONSIN GAS and their construction contractors will identify during construction activities:

    - Low areas along the pipeline route that are likely to collect water during construction, and
    - Suitable areas for the discharge of water accumulated within the pipe trench or other excavated area
    - Identify accumulated water that needs to be discharged as construction progresses

3. WISCONSIN GAS will require its construction contractors to obtain:

    - WISCONSIN GAS approval of all off-right-of-way and on-right-of-way discharge locations and techniques, and all trench dewatering discharge locations and techniques
    - WISCONSIN GAS may obtain voluntary permissions with landowners

4. WISCONSIN GAS will require its construction contractors to structure the work to minimize the accumulation of water within the trench.

5. In the event it is not possible to avoid water-related damages as described above, WISCONSIN GAS will:

    - Reasonably compensate the landowner for the damages, and
    - Restore the cropland and crops, pastureland, water courses, and any other damaged lands to their pre-construction condition.

Construction

1. All dewatering activities will be conducted in compliance with current drainage laws, local ordinances relating to such activities, WDNR permit conditions, and the provisions of the Clean Water Act.

2. Rainwater or groundwater that collects in the trench will be pumped:

- Onto a well-vegetated area that will prevent the water from returning to the right-of-way, or
- Into a filter bag or a settling basin constructed of straw bales when adequate vegetation is absent or when in the vicinity of a wetland or waterbody.

Additionally, sediment barriers or similar erosion control measures may be used as necessary to divert the flow of pumped water.

3. To minimize the extraction of silt or sediment from the trench the intake will be prevented from touching the bottom or side of the trench. A flotation device or a support will be attached to the intake of the suction line to prevent sucking up soil and other debris from the trench.

4. All structures will be located in a stabilized and vegetated area with a minimum buffer width of 100 feet between it and any adjacent water body or wetland area. Sediment barriers or similar erosion control measure will be installed if an adequate buffer is not available.

5. Preferably, dewatering efforts will not deliver water onto cropland. If it is absolutely necessary to do so, the crops will be inundated (flooded) less than 24 hours.

6. The dewatering activities will not deposit gravel, sediment (mud) or other debris in fields, pastures, or watercourses.

7. Dewatering sites will be selected, and structures and slope breakers will be installed, to ensure that water is not directed into known cultural resources sites or locations of sensitive plant communities.

8. Backfill activities will begin as soon as possible after pipe installation to prevent the trench from refilling with water in high water table conditions. Attempts to dewater as far from the back-filling activity as possible will be made.

9. Dewatering will be monitored and stopped, if necessary, to correct conditions and practices that do not comply with this best management practice.

10. Discharge of water from the trench of non-organic farm operations and hydrostatic testing shall not be made in a way that can runoff onto adjacent organic farm operations.

WISCONSIN GAS WEST CENTRAL LATERAL PROJECT
Best Management Practices for Construction within Agricultural Lands

BMP 06 - Soil Restoration

Purpose: To restore the contour and to ensure the quality and agricultural productivity of the soil by:

- Avoiding the mixing of the topsoil with the subsoil, and
- Eliminating compaction from the subsoil and topsoil layers, and
- Assuring the rock content of the upper 12-inches of topsoil and subsoil is not increased after completion of the construction and restoration process.

Installation Planning

1. WISCONSIN GAS will identify, through consultation with the landowner, all rock disposal location(s) on the ROW or adjacent to the ROW. This location can be on the construction right-of-way of the landowner's property. Written permission from the landowner is required for disposal at another site on the farm.

2. WISCONSIN GAS will consult the landowner about properly disposing of excess excavated material to maintain agricultural productivity.

3. Successful restoration of the soil requires that the proper equipment be used, in the proper sequence, under the correct soil moisture content conditions. Each step in the restoration process is completed before moving to the next step. De-compaction will occur as determined necessary by the Agricultural Inspector (AI) and in consultation with the contractor and landowner.

4. Heavy equipment will not be allowed to cross those agricultural areas that have been de-compacted. In the event any area of previously restored right-of-way that is traversed by equipment for any reason (e.g. to reach a hydrostatic test location) which results in further compaction, the area will be appropriately restored.

Construction:

Backfilling

1. After installation of the pipeline is complete, the trench materials will be backfilled in the order in which they were removed.

Crowning the Trench

1. Crowning the trench area will compensate for ground settling or subsidence. The crown shall be constructed with native topsoil material. Topsoil from adjacent ROW areas will be used (if needed) for crowning to avoid the potential for mixing of subsoil and topsoil in the event settling is overestimated. The AI will determine the height of the crown based on soil type and moisture content. Breaks will be left in the crown to accommodate existing surface drainage systems while the crown settles over the first year post construction.

2. Crowning the trench will be used when necessary and performed per WISCONSIN GAS standards.

3. If in the first growing season post-construction the landowner determines that the crown area may have settled too much or too little and is causing a problem with agricultural activity, WISCONSIN GAS will consult with the landowner to determine what corrective action may be needed to restore the crown area to its pre-construction topography and productivity.

De-compacting the Subsoil

1. Deep subsoil ripping shall be carried out on all traffic and work areas of agricultural right-of-way where full corridor stripping of topsoil occurred. This includes the pipeline workspaces, temporary workspaces, and temporary access roads. It does not include the area over the trench.

2. De-compaction of the subsoil will only be done when the subsoil condition is friable/tillable in the top 18-inches of the subsoil profile as determined by the AI. The AI, using their best judgment, may need to allow the de-compaction of the subsoil in areas where soils appear to be either predominantly wet

or in low lying areas where water ponding has occurred due to the "trench effect" as a result of topsoil removal. In these cases the AI will consult with, and receive approval from, the landowner or tenant.

3. Ripping equipment to be used will be selected based on successful use on previous pipeline projects such as the v-ripper, chisel plow, paraplow, or an equivalent. WISCONSIN GAS may, at their discretion, choose to compensate the landowner to chisel plow his impacted land(s).

4. The normal depth of tillage is 18-inches. The AI will provide guidance on the appropriate depth of rip in special situations or soil types. For example, a depth of 6 to 8-inches may be appropriate on intensively drained mineral (lacustrine/alluvial) soils. A depth of 22-inches may be appropriate for a deeply and severely compacted area.

5. The optimal spacing of the shanks will depend on the ripping equipment, soil type and moisture content, but will typically be in the range of 8 to 24-inches. Shanks are at their optimum spacing when the implement shatters the soil area between the shanks. Shatter is evidenced by the soil lifting between the shanks as the implement passes. The AI can assist the contractor in selecting the appropriate shank spacing.

6. Subsoil compaction will normally be alleviated with three passes of the de-compaction equipment. Multiple passes refers to the implement passing over the same soil band. That is, three passes of a 10-foot wide implement will treat a 10-foot wide band of soil, not a 30-foot wide band.

7. Passes must be made in multiple directions. This can be achieved in the narrow pipeline right-of-way by weaving the implement back and forth across the area being ripped.

8. If de-compaction was not successful, the de-compaction effort will continue. The contractor is required to make as many passes as necessary to alleviate compaction. If the de-compaction effort is not successful after additional passes, a change in the de-compaction equipment used would be appropriate, and determined with guidance from the AI.

<u>Topsoil Replacement</u>

1. The topsoil will be replaced to its original depth across the spoil storage, trench, work, and traffic areas . The layer of replaced topsoil should be uniform across the right-of-way width, including the crown over the trench.
2. Topsoil should be replaced with small tracked machinery or equivalent light loaded equipment to avoid compaction of the topsoil and subsoil layers. Rubber tired motor graders may be used to spread and level topsoil to address unevenness in the field due to pipeline construction. In areas where minimal tillage, no-till, or level land farming practices are employed, a motor grader will be required to establish final ROW grades.

<u>De-compacting Through the Topsoil</u>

1. De-compaction through the topsoil may be necessary if the subsoil and/or topsoil are compacted during topsoil replacement activities.

<u>Final Rock Removal</u>

1. Replacing the topsoil (or de-compacting through the topsoil) may free some rocks and bring them to the surface.
2. The size, density and distribution of rock remaining on the construction work area should be the same as adjacent areas not disturbed by construction

<u>Final Cleanup</u>

1. Any area of previously restored right-of-way should not be traversed by unnecessary equipment traffic. All construction-related debris, including litter generated by the construction crews, will be removed from the landowner's property and disposed of appropriately.

2. Final clean-up begins immediately after all the other above-mentioned sequence of restoration activities operations are completed, and not before. Final clean-up includes installation of permanent erosion control measures and disposal of construction debris and will be completed within 14 days after backfilling in the area, weather permitting, or as soon as possible thereafter. Final clean-up shall not be delayed until the end of the next seeding season. If final clean-up is not completed within the 14-day time period, temporary erosion controls will be installed.

WISCONSIN GAS WEST CENTRAL LATERAL PROJECT
Best Management Practices for Construction within Agricultural Lands

BMP 07 - Seeding and Seed Bed Preparation

Purpose:

1. To place the seed into the soil at the correct time and proper depth to promote sufficient seed-soil contact on cropland or pasture requiring seeding.
2. To prepare the soil surface of an exposed area by natural or artificial means, such as tilling and fertilizing.
3. To minimize topsoil erosion on disturbed agricultural areas.

Installation Planning

WISCONSIN GAS will reseed over the entire right-of-way following final clean-up. WISCONSIN GAS will not apply seed to certified organic farms, prior to consulting with the landowner regarding how reseeding will be accomplished.

1. WISCONSIN GAS will attempt to identify properties during the pre-construction phase where cropland seeding procedures or pasture seeding procedures will be used.
2. During recommended seeding periods, seedbed preparation should immediately follow soil restoration as soon as weather conditions and individual right-of-way requirements permit.
3. Seeding will be completed immediately after finishing seedbed preparation, weather permitting. Temporary erosion control measures will be used if this timeframe cannot be met.
4. For seeding outside of the recommended seeding periods, temporary erosion control methods will be used.
5. WISCONSIN GAS will consult with the landowner to determine the seed mix, if appropriate.

Construction

Seed Selection

1. An annual oat, wheat, or similar grain will be used for erosion control on crop land and a special pasture seeding mix will be used for all pastures.

Seedbed Preparation for Conventional, Broadcast and Hydroseeding

1. The ideal condition for conventional seeding is a smooth, firm, clod-free soil for optimum seed placement with drills or cultipacker seeders, if appropriate for that type of seed. The soil should be firm enough at planting for an adult footprint to sink no deeper than 3/8-inch. Avoid overworking the soil because rainfall following seeding may crust the surface, preventing seedling emergence.
2. If the area to be seeded has been recently loosened, and will provide an adequate seedbed, no additional tillage will be required.
3. If the area to be seeded has been compacted or crusted, the top layer of soil will be tilled.
4. Spike–toothed harrows may also be used during seedbed preparation. The spikes of the harrow will dig lightly into the soil to break up soil masses. Harrows may also be used to cover broadcast seed.
5. The seedbed will be scarified to create sites for seed to lodge and germinate where broadcasting the seed or hydroseeding will be used.

Seeding

1. Seeding of permanent cover will be done, whenever possible, during the recommended seeding date ranges for west central Wisconsin.
2. If seeding cannot be accomplished before the recommended October 15 seeding deadline, it will be done in conformity with the Critical Area Planting conservation practice standard of the NRCS, or temporary erosion controls will be implemented and the seeding of permanent cover done at the beginning of the next seeding season.

3. Any soil disturbance occurring outside of the recommended October 15 seeding deadline date, or any bare soil left unstabilized by vegetation, will be treated as a winter construction condition and appropriate erosion controls will be installed to minimize erosion over winter and spring thaw.
4. After seedbed preparation, the seed mixes of all the permanent grasses or legume plantings will be applied at the rate determined from the , Agricultural Inspector, landowner or recommended by the USDA-Natural Resources Conservation Service (NRCS).
5. In areas where a different seed mix is proposed, seeding will conform to the Critical Area Planting conservation practice standard of the NRCS, Conservation Reserve Program or any other similar federal program.
6. Grass waterways and terraces will be seeded to reestablish grass cover similar to preconstruction conditions. Erosion control measures, such as mulch or erosion control fabric, will be used in conjunction with seeding.
7. If a Certified Organic Farm will be impacted by construction, WISCONSIN GAS will coordinate with the affected landowner to ensure that an appropriate seed mix and planting methods are used as required by the farm's Certification Plan.

WISCONSIN GAS WEST CENTRAL LATERAL PROJECT
BMP 08 - Crop Compensation

Purpose: To ensure that agricultural landowners are fairly compensated for loss of crop production due to the pipeline project.

Planning:

1. WISCONSIN GAS will compensate the landowner for crop loss once at the beginning or the end of the project. If the landowner rents or leases out the land to a renter, then the renter will be compensated in lieu of the landowner. There will be an attempt to communicate the agreement of compensation to both the renter as well as the landowner.

2. The value of the crop will be determined by the Payment Worksheet in the Easement Agreement Package. Crop compensation will be based on September/October 2014 futures and will be adjusted upward in year of construction if crop prices increase, but will not change if crop prices decline.

3. The landowner/renter will be compensated a total of 200% of the value of the crop based on the calculation in Item 2 above. 100% of the value of the crop during the year of construction, 60% the first year after construction, and 40% the second year after construction.

4. The landowner/renter would signify agreement by signing a damage release form.

WISCONSIN GAS WEST CENTRAL LATERAL PROJECT
Best Management Practices for Construction within Agricultural Lands
BMP 09 - Three-Lift Soil Handling

Purpose: To maintain the root zone over the trench area to the extent practicable through management of the topsoil, and subsoil layers in areas where the subsoil qualifies for this three-lift protocol.

Organization: The contractor will be responsible for implementing the three-lift soil-handling method. The Agricultural Inspectors (AI) will be available to assist in making “field calls” such as identifying boundaries between soil layers and to monitor compliance with this BMP.

Installation Planning:

1. In areas where the AI determines the need to apply the triple-lift soil handling practice during trenching operations, an attempt will be made in preconstruction planning to ensure that adequate construction right-of-way space is made available. WISCONSIN GAS will compile a list of potentially affected farmland owners whose land is eligible for triple lift soil handling during excavation of the trench. This will be obtained from NRSC Soil Maps and/or original soil maps for each county. This list of qualifying "candidate" soils and parcels will be provided to the Wisconsin Department of Agriculture, Trade, & Consumer Protection (WDATCP) and to the Agricultural Inspectors (AIs).

2. The criteria for soils qualifying as "candidates" for the three-lift soil handling procedure are determined by WDATCP on lands that involve cultivated croplands, rotated pastureland, or government set-aside program land. Locations of tree-lift soil handling will be confirmed by the AI.

3. Where applicable, WISCONSIN GAS will inform landowners possessing lands containing soils within the construction right-of-way (ROW) that meet the three-lift soil handling criteria and offer landowners the option of implementing the three-lift soil trenching procedure on their property during construction.

4. WISCONSIN GAS will include in the construction bid documents explanation of the three-lift soil handling procedure along with the potential locations. WISCONSIN GAS will also review the process and the potential locations with the bidders during the pre-bid job showing to ensure the potential contractor is well acquainted with the expectations. WISCONSIN GAS will also review this process and the potential locations with the selected construction contractor during the construction “kick-off” meeting. The three-lift soil handling process will also be included in WISCONSIN GAS’s environmental training sessions required for all field personnel prior to working on the construction right-of-way.

Construction:

1. WISCONSIN GAS may perform additional soil sampling to confirm the depth and extent of soil layers.

2. All topsoil up to a depth of at least 12 inches of will be stripped and stockpiled along the edge of the working side of the construction ROW.

3. After topsoil has been removed (first lift) and trenching begins, a backhoe will remove the upper portion of the subsoil (second lift) and place this layer as far from the trench as the reach of the equipment permits on side of the construction ROW.

4. Where the subsoil material changes the backhoe operator will place this underlying material (third lift) between the trench and the second-lift pile on the side of the right-of-way. Since the depth at which the underlying material is encountered will vary from location to location, the boundary between the upper subsoil and the underlying material will be determined visually by the construction and inspection team, with the advice of the AI when necessary.

5. WISCONSIN GAS will attempt to maintain separation between the two piles. Depending on the available workspace and the volume of soil involved, maintaining complete separation between these two piles may not be possible.

6. During backfilling, the operator will make every effort to place the lower subsoil pile material (third layer) of the spoil material in the trench first, and will only then replace the upper subsoil layer (second layer) of the spoil material in the trench.

7. WISCONSIN GAS will perform field adjustments as necessary in conjunction with the contractor and AI to ensure lower subsoil or parent material does not become mixed with the upper subsoil by the proper placement of the spoil piles to the extent practicable.

Appendix III
Sample Easement

Document Number	GAS DISTRIBUTION EASEMENT CERTIFICATE OF COMPENSATION AND NOTICE OF RIGHT OF APPEAL

FOR AND IN CONSIDERATION of the sum of $1.00 and other good and valuable consideration to them paid, the receipt whereof is hereby acknowledged, _____, owners, hereinafter referred to as "grantor" do hereby give, grant and convey unto

WISCONSIN GAS LLC, a Wisconsin limited liability company doing business as We Energies

hereinafter referred to as "grantee", its successors and assigns, subject to the limitations and reservations herein stated, the perpetual and exclusive right, permission and authority to lay, install, construct, maintain, operate, inspect, alter, replace, protect, test, patrol, extend, repair, reconstruct, relocate, enlarge, and remove or abandon a pipeline or pipelines with valves, tie-overs, main laterals and service laterals, and other appurtenant facilities, including cathodic protection apparatus used for corrosion control, all of which shall be and remain the property of the grantee, for the transmission and distribution of natural gas and all by-products thereof or any liquids, gases, or substances which can or may be transported or distributed through a pipeline or pipelines on, over, under, across, through and upon the hereinafter described strip of land fifty (50) feet in width (or such other widths as described in Exhibit A and shown on Exhibit B), being a part of the premises of the grantor in a part of the _____ ¼ of Section _____, Township _____ North, Range _____ East, Town of _____, _____ County, Wisconsin (the "Easement Area").

RETURN TO:

WE ENERGIES
P. O. BOX 159
BLACK RIVER FALLS, WI 54615

(Parcel Identification Number)

The location of the Easement Area with respect to the premises of the grantor is as described on Exhibit "A" and shown on the attached Easement Description Map, marked Exhibit "B", and made a part hereof by this reference.

The grantee may request or otherwise appoint, assign, and duly authorize other persons, firms or corporations to perform, carry out and complete the activities and operations, herein enumerated, as it deems necessary and convenient for the full enjoyment and use of the rights herein granted. The rights herein granted to the grantee may be assigned in whole or in part by the grantee at any time.

The grantee shall have all other rights and benefits necessary or convenient for the full enjoyment and use of the rights herein granted, including but not limited to, the right to remove and to clear all structures and obstructions such as, but not limited to, rocks, trees, brush, limbs and fences which might interfere with the rights herein contained, and the free and full right of ingress and egress over and across the Easement Area and other adjacent lands of the grantor to and from the Easement Area and the use of the Easement Area and other adjacent lands of the grantor, as necessary or convenient for the full enjoyment and use of the rights herein granted, during the operations of the grantee as herein above enumerated but not necessarily limited thereto.

Any pipe shall be buried to such depth that it will not interfere with the ordinary cultivation of such land.

The grantor covenants and agrees that no structures or above ground improvements (as defined in Exhibit D), obstructions or impediments, of whatever kind or nature will be constructed, placed, granted or allowed within the Easement Area, and the grantor further covenants and agrees that the elevation of the existing ground surface of land within the Easement Area will not be altered by more than six (6) inches without the prior written consent of the grantee. The grantor covenants and agrees not to plant any trees or shrubs within the Easement Area.

SAMPLE

The grantee and its agents shall have the further right to use, for initial construction purposes only, a strip(s) of land as shown on the attached Exhibit "B", as a temporary construction easement area. For non-wooded parcels the grantor and the grantee agree that the grantee may at the time of construction extend the temporary easement area up to an additional twenty-five (25) feet. The temporary easement is for construction purposes only and shall terminate when the need therefor passes.

The grantor, however, after the initial construction of the pipeline is completed, reserves the right to cultivate and use the ground surface within the Easement Area covered by this instrument provided that such use shall not, in the opinion of the grantee, interfere with or obstruct the grantee in its exercise of the rights and privileges herein granted, or create any actual or potential hazard to the pipeline facilities ultimately installed therein.

The grantor agrees to comply with the Addendum - General Construction Requirements and Restrictions for Wisconsin Gas LLC Gas Pipeline Easement Areas which is attached hereto, marked Exhibit "D", consisting of two pages, and made a part hereof by this reference.

The grantee, by the acceptance hereof, agrees to reasonably restore or repair damage to the grantor's property including replacement of damaged or removed fencing, and to compensate the grantor for any reasonable losses resulting therefrom, which the grantee proximately causes by the activities and operations hereinabove enumerated; but the grantee does not in any manner whatsoever waive or otherwise modify its rights and legal defenses which under law it may be entitled to raise, nor shall the grantee be held in any way responsible for indemnifying, protecting, or otherwise holding any person, firm, or corporation harmless from and against its or their own acts and omissions and the consequences thereof.

The grantor and the grantor's successors, assigns, heirs, executors and administrators, covenant and agree to and with the grantee, its successors and assigns, that at the time of the ensealing and delivery of this easement they are well seized of good and marketable title to the premises above described, and that the same are free and clear from all encumbrances that might materially adversely affect the rights of the grantee hereunder, except the mortgages of_____ filed of record prior to the date of the recording of this instrument, and will forever warrant and defend said easement against all and every person or persons lawfully claiming the whole or any part thereof.

In accordance with Section 32.06(2a) Wisconsin Statutes, any of the above named persons or parties having an interest of record in the property affected by this easement may appeal the amount of compensation paid for the rights herein granted within six (6) months after the date of recording of this document. The total consideration paid for such easement rights is stated on the Certificate of Compensation and Notice of Right of Appeal which is attached hereto, marked Exhibit "C", and made a part hereof by this reference.

The grantor hereby accepts a lump sum payment in consideration of the grant of this easement.

It is understood that the complete exercise of the rights herein conveyed may be gradual and not fully exercised for some time in the future, and that none of the rights herein granted shall be lost by non-use for any length of time.

This instrument shall be a covenant running with the land and shall be binding upon, and inure to the benefit of, the heirs, legal representatives, executors, administrators, devisees, legatees, successors or assigns of all parties hereto.

Any non-titled spouse signs below as the grantor for the purpose of releasing and waiving all rights he or she may hold under all applicable homestead exemption laws and all applicable marital property laws.

This _____ (is/is not) homestead property.

SAMPLE

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 201___ and the said _____ has caused these presents to be signed by its _____ this _____ day of _____, 201____.

By _____

By_____

STATE OF WISCONSIN)
: SS
COUNTY)

Personally came before me this _____ day of _____, 201__ the above named _____, to me known to be the persons who executed the foregoing instrument and acknowledged the same.

_____
Notary Public, State of Wisconsin
My commission

expires_____

SAMPLE

The undersigned mortgagee does hereby consent to this grant of easement and does hereby subordinate, and declare to be at all times subordinate and inferior, the interest of the mortgagee to the easement interest of the grantee as more fully set forth in this easement.

_____
MORTGAGEE

By_____

Print Name:_____

Title:_____

STATE OF WISCONSIN)
: SS
COUNTY)

Personally came before me this _____ day of _____, 201____, _____, of the above named corporation, _____**,** known to me to be the person who executed the foregoing instrument and to me known to be such _____ of said corporation, and acknowledged that he/she executed the foregoing instrument as such officer, as the deed of said corporation, by its authority.

_____
Notary Public, State of Wisconsin
My commission expires_____

SAMPLE

This instrument was drafted by Patricia Adams on behalf of We Energies, 231 W. Michigan Street, Milwaukee, WI 53203.

EXHIBIT "A"

LEGAL DESCRIPTION OF PROPERTY AND EASEMENT AREA

SAMPLE

EXHIBIT "B"

EASEMENT DESCRIPTION MAP

SAMPLE

EXHIBIT "C"

CERTIFICATE OF COMPENSATION AND NOTICE OF RIGHT OF APPEAL

SECTION 32.06 (2a), WISCONSIN STATS.

DATED THIS _____ DAY OF _____, 201___

Pursuant to Section 32.06(2a), Wisconsin Statutes, notice is hereby given of the acquisition of a certain easement attached hereto and made a part hereof by this reference. The names of all persons having an interest of record in the property affected by such easement immediately prior to the acquisition of the easement are the following:

Owners: _____

Mortgagee: _____

Such easement grants unto Wisconsin Gas LLC, its successors and assigns, the right, permission and authority to construct, maintain and operate gas pipeline facilities for the purpose of the transmission and distribution of natural gas and all by-products thereof or any liquids, gases, or substances which can or may be transported or distributed through a pipeline on, over, under, across, through, and upon the hereinafter described property to-wit:

> A strip of land _____ ( ) feet in width being a part of the premises of the grantor in a part of the _____ ¼ of Section _____, Township _____ North, Range _____ East, Town of _____, _____ County, Wisconsin as described on Exhibit A and shown on the attached Easement Description Map, marked Exhibit "B" together with the temporary easement shown on Exhibit B.
>
> Parcel Identification Number:

The consideration paid for the permanent easement as shown on the attached Easement Description Map, marked Exhibit "B" was $_____.

The consideration paid for the temporary easement as shown on the attached Easement Description Map, marked Exhibit "B" was $_____.

In accordance with Section 32.06 (2a) Wisconsin Stats., any of the above named persons or parties shall have six (6) months from the date of the recording of this certificate to appeal the amount of compensation herein stated by filing a petition with the judge of the Circuit Court of _____ County, Wisconsin, who shall assign the matter to the Chairperson of the County condemnation commissioners for hearing under Section 32.06(8), Wis. Stats.. Notification of such petition shall be made to all persons or parties having an interest of record in the above property, and the procedures prescribed under Sections 32.06(9)(a) and (b), 32.06(10), and 32.06(12) and Chapters. 808 and 809 shall govern such appeals.

SAMPLE

EXHIBIT "D"

ADDENDUM

General Construction Requirements and Restrictions for Wisconsin Gas LLC Gas Pipeline Easement Areas

1. The Easement Area must be accessible to Wisconsin Gas LLC personnel or their agents.

2. Fill material, rubble, scrap, pavement, berms or earthworks may not be placed within the Easement Area without Wisconsin Gas LLC's prior written approval.

3. The elevation or grade over the gas pipeline may not be altered by more than 6 inches without Wisconsin Gas LLC's prior written approval. A minimum of 36 inches of cover over the gas pipeline must be maintained at all times.

4. Retention ponds and their inlets/outlets are not permitted within the Easement Area.

5. No drainage ditches or drain tiles may be constructed within the gas pipeline Easement Area unless approved in writing by Wisconsin Gas LLC with proper cover and erosion protection. Plans must be submitted to Wisconsin Gas LLC for written approval.

6. Septic fields or mound systems may not be constructed within the Easement Area. Laterals to or from the field or mound may cross the gas pipeline, provided that they maintain an 18 inch separation from the gas pipeline. If it is necessary to locate and expose the gas pipeline, excavation must be done by hand-digging with a Wisconsin Gas LLC representative present.

7. Underground culverts, pipelines, cables, sewers or any utility must not be placed within 18 inches of the gas pipeline in any direction and must be hand dug when within 4 feet of the gas pipeline. Wisconsin Gas LLC must be notified when excavation is planned in proximity to the gas pipeline to view and inspect excavation activities. Plans must be submitted to Wisconsin Gas LLC for prior written approval.

8. Digger's Hotline must be contacted at least 3 days prior to any excavation or construction activities within the Easement Area. The current contact for Digger's Hotline is 811 or 1-800-242-8511 or www.diggershotline.com.

SAMPLE

EXHIBIT "D" – Page 2

9. Structures or above ground improvements **<u>are not</u>** allowed within the Easement Area. These prohibited structures include but are not limited to: houses, garages, outbuildings, storage sheds, decks, swimming pools, gazebos, satellite dish antennas and dog kennels/runs. Unless otherwise approved by the Grantee, fencing may be installed in the Easement Area, but fence posts are limited to an installation distance of 5 feet from the gas pipeline.

10. Landscaping, including trees and shrubs, **<u>is not</u>** permitted in the Easement Area.

11. The installation of future roadways must be supported by sound structural fill around the gas pipeline. Wisconsin Gas LLC may require soil borings to establish the subgrade load bearing characteristics of the site and prove that unstable soils are not present around the gas pipeline. Plans must be submitted to Wisconsin Gas LLC for written approval.

12. A paved/compacted surface, such as a driveway, is allowed within the Easement Area provided that a minimum cover of 48 inches is maintained over the gas pipeline. **The minimum cover does not apply to roadways**. Plans must be submitted to Wisconsin Gas LLC for prior written approval.

13. Heavy earth moving equipment may not be routed over the gas pipeline without providing load bearing protection, such as temporary pavement, heavy mats, additional compacted cover or other adequate bridging methods. Prior notification to and written approval from Wisconsin Gas LLC are required.

14. **Wisconsin Gas LLC Field Operations must be contacted at least three (3) working days prior to any excavation activity within the Easement Area to coordinate oversight or inspection, or to confirm compliance with these provisions. The current phone number for Wisconsin Gas LLC Call Center is 1-800-242-9137.**

15. Additional protective requirements may be necessary upon review of the grantor's construction plans submitted to Wisconsin Gas LLC as required by the Easement Agreement.

WISCONSIN GAS LLC
Attn: System Engineering, A516
333 W. Everett Street
MILWAUKEE, WI 53203

SAMPLE

State of Wisconsin
Department of Agriculture,
Trade & Consumer Protection

Agricultural Resource Management

For additional copies, contact:

DATCP
Agricultural Impact Program
P.O. Box 8911
Madison, WI 53708-8911

608/224-4646
Fax: 608/224-4615