

Fond du Lac Line 4 Project

Application for Pipeline Routing Permit and Partial Exemption

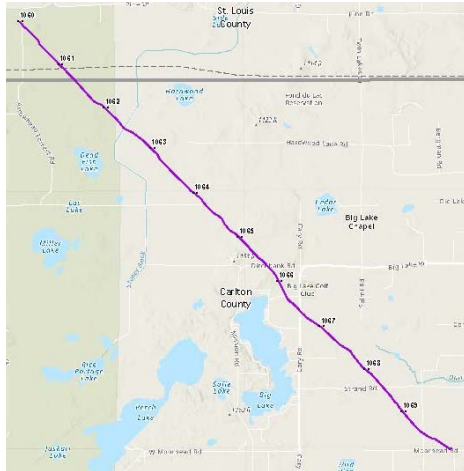
Minnesota Public Utilities Commission

Appendix G.1

Potential Construction Impacts by Land Use and County

Appendix G: Land Cover and Wetland Detailed Construction and Operations Impacts

Appendix G.1: Land Cover – Construction Impacts (page 1 of 2)



Legend	
	Represents planned Line 3 Replacement operationally maintained pipeline ROW that is planned to be disturbed by the Line 3 Replacement Project and planned to be used as temporary workspace for the Fond du Lac Line 4 Project.
	Represents planned new Line 4 operationally maintained pipeline ROW that is planned to be disturbed by the Line 3 Replacement Project.
	Represents Line 4 temporary workspace planned to be cleared for the Line 3 Replacement Project.
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Figure G.1-1: Line 4 Upland Construction Workspace

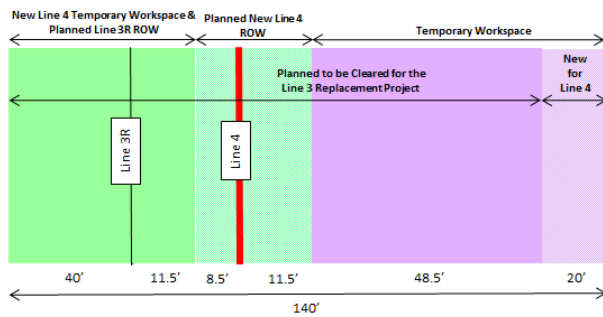


Figure G.1-2: Line 4 Wetland Construction Workspace

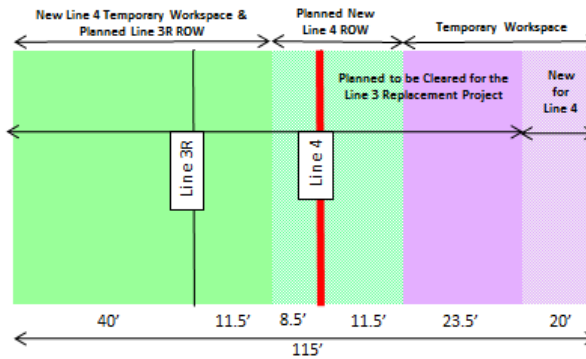
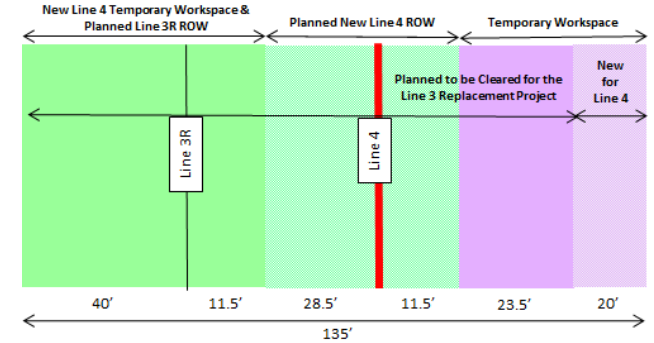


Figure G.1-3: Line 4 Saturated Wetland Construction Workspace



Appendix G: Land Cover and Wetland Detailed Construction and Operations Impacts

Appendix G.1: Land Cover – Construction Impacts (page 2 of 2)

Fond du Lac Line 4 Project
 Pipeline Routing Permit Application
 MPUC Docket No. PL9/PPL-18-752

TABLE G.1-1 Fond du Lac Line 4 Project - Total Construction Impacts by Land Cover Type (acres)					
Land Cover Type	Area of Planned Disturbance			Area of New Disturbance	Grand Total
	Temporary Line 4	Line 4 New ROW	Temporary Line 4	Temporary Line 4	
	Developed Land	2.4	0.5	0.6	
Forest Land	22.9	10.6	12.7	10.7	56.9
Open Land	14.0	3.5	3.2	1.2	21.9
Wetland/Open Water	38.8	22.1	9.1	14.3	84.4
Total	78.1	36.7	25.6	27.7	168.1

TABLE G.1-3 Fond du Lac Line 4 Project - Construction Impacts by Land Cover Type (acres) – Carlton County					
Land Cover Type	Area of Planned Disturbance			Area of New Disturbance	Grand Total
	Temporary Line 4	Line 4 New ROW	Temporary Line 4	Temporary Line 4	
	Developed Land	1.8	0.5	0.4	
Forest Land	17.8	8.6	11.3	9.3	47
Open Land	13.5	3.4	3.2	1.0	21.1
Wetland/Open Water	34.7	19.4	8.2	12.8	75.1
Total	67.9	31.6	23.1	24.2	146.8

TABLE G.1-2 Fond du Lac Line 4 Project - Construction Impacts by Land Cover Type (acres) – St. Louis County					
Land Cover Type	Area of Planned Disturbance			Area of New Disturbance	Grand Total
	Temporary Line 4	Line 4 New ROW	Temporary Line 4	Temporary Line 4	
	Developed Land	0.6	0.1	0.2	
Forest Land	5.1	2.1	1.4	1.3	9.9
Open Land	0.4	0.1	0.1	0.3	0.9
Wetland/Open Water	4.1	2.9	0.9	1.4	9.3
Total	10.2	5.1	2.6	3.3	21.2

TABLE G.1-4 Fond du Lac Line 4 Project – Access Road by Land Cover Type (acres)			
Land Cover Type	St. Louis County	Carlton County	Total
Developed Land	0.2	0.6	0.9
Forest Land	3.6	0.0	3.6
Open Land	0.4	0.0	0.4
Wetland/Open Water	0.2	0.3	0.5
Total	4.4	0.9	5.3

Note: Table totals may not total consistently due to rounding.

Fond du Lac Line 4 Project

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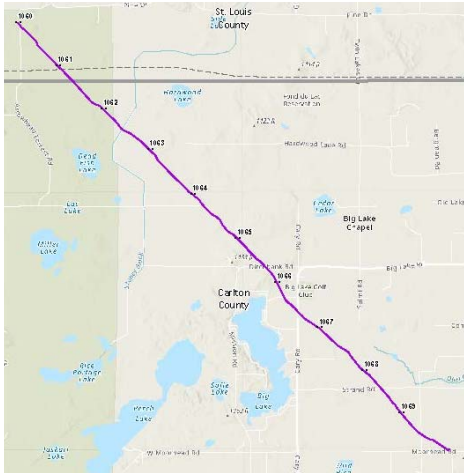
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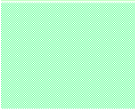

Appendix G.2

Potential Operation Impacts by Land Use and County

Fond du Lac Line 4 Project
 Pipeline Routing Permit Application
 MPUC Docket No. PL9/PPL-18-752

Appendix G: Land Cover and Wetland Detailed Construction and Operations Impacts
Appendix G.2: Land Cover – Operations Impacts (page 1 of 2)



Legend	
	Represents planned Line 3 Replacement operationally maintained pipeline ROW that is planned to be disturbed by the Line 3 Replacement Project and planned to be used as temporary workspace for the Fond du Lac Line 4 Project.
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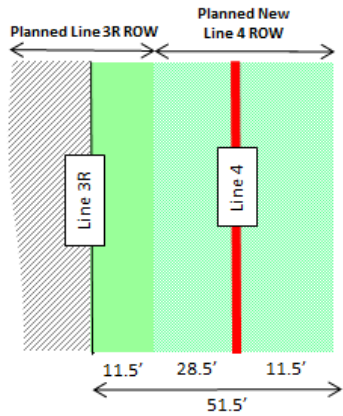


Figure G.2-1: Line 4 Operations Workspace – Upland/Wetlands

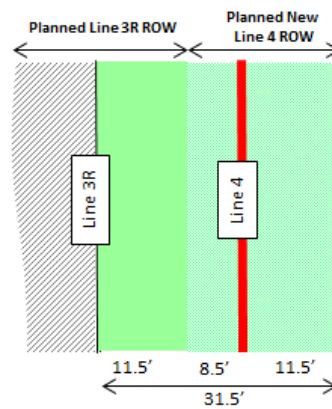


Figure G.2-2: Line 4 Operations Workspace – Saturated Wetlands

Appendix G: Land Cover and Wetland Detailed Construction and Operations Impacts
Appendix G.2: Land Cover – Operations Impacts (page 2 of 2)

TABLE G.2-1 Fond du Lac Line 4 Project - Total Operations Impacts by Land Cover Type (acres)	
Land Cover Type	Area of Planned Disturbance
	Line 4 New ROW
Developed Land	0.5
Forest Land	10.6
Open Land	3.5
Wetland/Open Water	22.1
Total	36.7

TABLE G.2-3 Fond du Lac Line 4 Project - Operations Impacts by Land Cover Type (acres) - Carlton County	
Land Cover Type	Area of Planned Disturbance
	Line 4 New ROW
Developed Land	0.4
Forest Land	8.5
Open Land	3.4
Wetland/Open Water	19.2
Total	31.6

TABLE G.2-2 Fond du Lac Line 4 Project - Operations Impacts by Land Cover Type (acres) – St. Louis County	
Land Cover Type	Area of Planned Disturbance
	Line 4 New ROW
Developed Land	0.1
Forest Land	2.1
Open Land	0.1
Wetland/Open Water	2.9
Total	5.1

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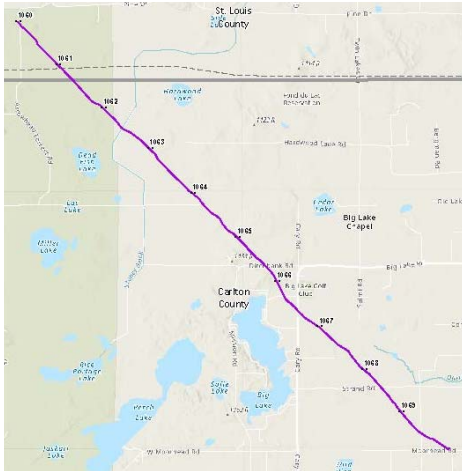
Minnesota Public Utilities Commission

Appendix G.3

Potential Construction Impacts by Wetland Type and County

Appendix G: Land Cover and Wetland Detailed Construction and Operations Impacts

Appendix G.3: Wetlands – Construction Impacts (page 1 of 2)



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Figure G.3-1: Line 4 Wetland Construction Workspace

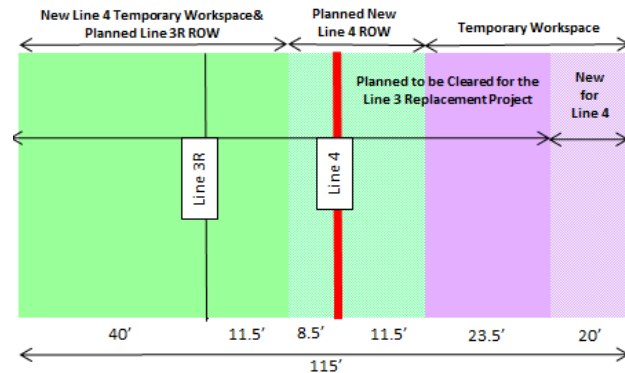
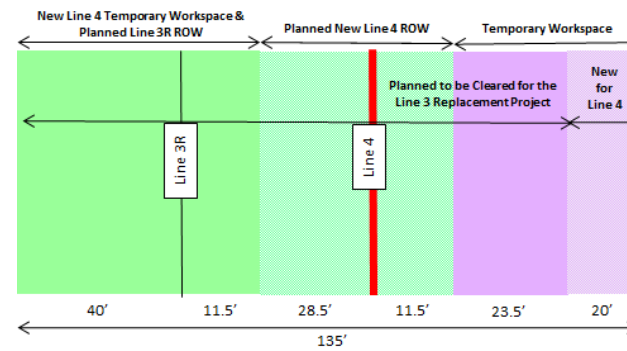


Figure G.3-2: Line 4 Saturated Wetland Construction Workspace



Appendix G: Land Cover and Wetland Detailed Construction and Operations Impacts
Appendix G.3: Wetlands – Construction Impacts (page 2 of 2)

TABLE G.3-1 Fond du Lac Line 4 Project - Total Construction Impacts by Wetland Type (acres)					
Wetland Type	Area of Planned Disturbance			Area of New Disturbance	Grand Total
	Temporary Line 4	Line 4 New ROW	Temporary Line 4	Temporary Line 4	
	PEM	29.3	10.1	1.7	
PFO	4.0	7.7	4.9	8.1	24.7
PSS	10.9	6.1	3.2	3.6	23.8
PUB	1.2	0.7	0.1	0.4	2.4
Total	45.4	24.6	9.9	16.0	95.9

TABLE G.3-3 Fond du Lac Line 4 Project - Construction Impacts by Land Cover Type (acres) – Carlton County					
Wetland Type	Area of Planned Disturbance			Area of New Disturbance	Grand Total
	Temporary Line 4	Line 4 New ROW	Temporary Line 4	Temporary Line 4	
	PEM	26.2	8.4	1.6	
PFO	3.1	6.9	4.3	7.3	21.6
PSS	8.3	4.5	2.4	2.8	18.1
PUB	1.2	0.7	0.1	0.4	2.4
Total	38.8	20.5	8.4	13.8	81.5

TABLE G.3-2 Fond du Lac Line 4 Project - Construction Impacts by Wetland Type (acres) – St. Louis County					
Wetland Type	Area of Planned Disturbance			Area of New Disturbance	Grand Total
	Temporary Line 4	Line 4 New ROW	Temporary Line 4	Temporary Line 4	
	PEM	3.2	1.8	0.1	
PFO	0.9	0.9	0.6	0.7	3.1
PSS	2.6	1.5	0.8	0.7	5.7
PUB	0.0	0.0	0.0	0.0	0.0
Total	6.6	4.1	1.6	2.2	14.5

TABLE G.3-4 Fond du Lac Line 4 Project – Access Road by Wetland Type (acres)			
Wetland Type	St. Louis County	Carlton County	Total
PEM	0.3	0.2	0.4
PFO	0.0	0.0	0.0
PSS	0.1	0.1	0.2
PUB	0.0	0.0	0.0
Total	0.4	0.3	0.6

Note: Table totals may not total consistently due to rounding.

Fond du Lac Line 4 Project

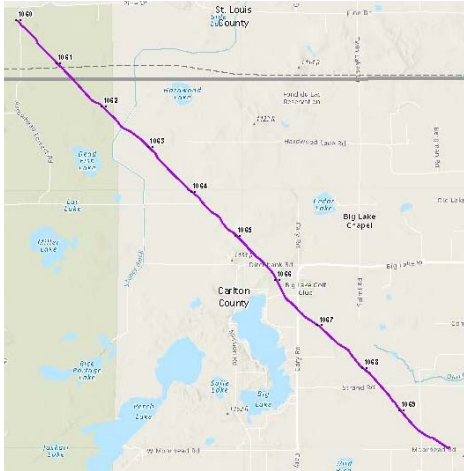
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Appendix G.4

Potential Operation Impacts by Wetland Type and County

Appendix G: Land Cover and Wetland Detailed Construction and Operations Impacts
Appendix G.4: Wetlands – Operations Impacts (page 1 of 2)



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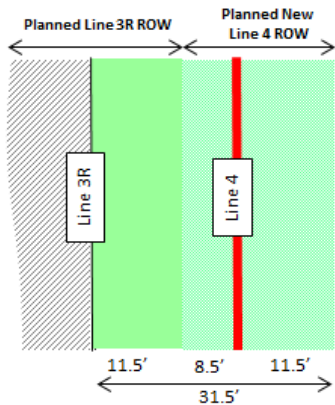


Figure G.4-1: Line 4 Operations Workspace – Upland/Wetlands

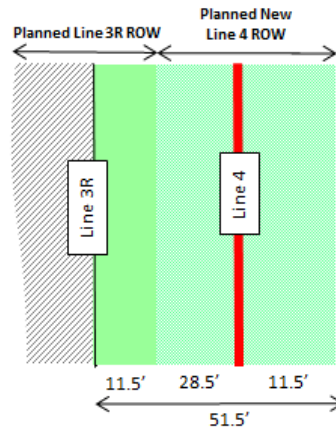


Figure G.4-2: Line 4 Operations Workspace – Saturated Wetlands

Appendix G: Land Cover and Wetland Detailed Construction and Operations Impacts
Appendix G.4: Wetlands – Operations Impacts (page 2 of 2)

TABLE G.4-1 Fond du Lac Line 4 Project - Total Operations Impacts by Wetland Type (acres) (Type Conversion)	
Wetland Type	Area of Planned Disturbance
	Line 4 New ROW
PEM	0.0
PFO	7.7
PSS	6.1
PUB	0.0
Total	13.8

TABLE G.4-3 Fond du Lac Line 4 Project - Operations Impacts by Wetland Type (acres) – Carlton County (Type Conversion)	
Wetland Type	Area of Planned Disturbance
	Line 4 New ROW
PEM	0.0
PFO	6.9
PSS	4.5
PUB	0.0
Total	11.4

TABLE G.4-2 Fond du Lac Line 4 Project -Operations Impacts by Wetland Type (acres) – St. Louis County (Type Conversion)	
Wetland Type	Area of Planned Disturbance
	Line 4 New ROW
PEM	0.0
PFO	0.9
PSS	1.5
PUB	0.0
Total	2.4

TABLE G.4-4 Fond du Lac Line 4 Project – Operations Impacts by Wetland Type (acres) (Permanent Fill Associated with Valve Sites)			
Wetland Type	St. Louis County	Carlton County	Total
PEM	0.00	0.00	0.00
PFO	0.00	0.00	0.00
PSS	0.00	0.03	0.03
PUB	0.00	0.00	0.00
Total	0.00	0.03	0.03

Note: Table totals may not total consistently due to rounding.