

Appendix M

Unique Natural Resources Tables

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Table M-1. Number of Occurrences of Rare Invertebrate Animals for the Applicant’s Preferred Route, Existing Line 3, and System Alternative SA-04

Common Name	Scientific Name	State	State Status ^a	Applicant's Preferred Route ^b				Existing Line 3		System Alternative SA-04 ^d			Rail ^e	Truck ^e	
				Con WA	Op ROW	Total ^c		0.5 mile	Operations	0.5 mile	Con	Op			0.5 mile
						Con	Op								
Arthropods															
A caddisfly	<i>Anabolia ozburni</i>	MN	SPC			1		1	1	1					
A jumping spider	<i>Marpissa formosa</i>	MN	SPC					1					1		
A jumping spider	<i>Phidippus pius</i>	MN	SPC										1		
Iowa skipper	<i>Atrytone arogos iowa</i>	MN	SPC										1		
Leadplant flower moth	<i>Schinia lucens</i>	MN	SPC										1		
Red-tailed prairie leafhopper	<i>Aflexia rubranura</i>	MN	SPC										1		
Redveined prairie leafhopper	<i>Aflexia rubranura</i>	IL	THR										1		
Regal fritillary	<i>Speyeria idalia</i>	MN	SPC										2		
Regal fritillary	<i>Speyeria idalia</i>	IL	THR								1	1	1		
Mollusks															
Black sandshell	<i>Ligumia recta</i>	MN	SPC	2	2	2	2	2	2	5	2	2	7		
Black sandshell	<i>Ligumia recta</i>	IL	THR								1	1	2		
Butterfly	<i>Ellipsaria lineolata</i>	IA	THR										1		
Creek heelsplitter	<i>Lasmigona compressa</i>	MN	SPC	3	3	3	3	4	3	4			2		
Creeper	<i>Strophitus undulatus</i>	IA	THR										2		
Ellipse	<i>Venustaconcha ellipsiformis</i>	MN/IA	THR										2		
Fluted-shell	<i>Lasmigona costata</i>	MN	THR	1	1	1	1	1	1	1			1		
Higgins eye	<i>Lampsilis higginsii</i>	IL	END								1	1	1		
Monkeyface	<i>Quadrula metanevra</i>	MN	THR								1	1	1		
Mucket	<i>Actinonaias ligamentina</i>	MN	THR								2	2	4		
Pink heelsplitter	<i>Potamilus alatus</i>	ND	NA					1		1					
Pistolgrip	<i>Tritogonia verrucosa</i>	MN	END								1	1	1		
Round pigtoe	<i>Pleurobema sintoxia</i>	MN	SPC								1	1	1		
Spike	<i>Elliptio dilatata</i>	MN	THR								1	1	3		
Yellow sandshell	<i>Lampsilis teres</i>	MN/IA	END								1	1	4		
Total Number of Rare Invertebrate Species				3	3	4	3	6	4	5	10	10	22	None	None
Total Occurrences of Rare Invertebrate Animals				6	6	7	6	10	7	12	12	12	41	None	None
Total Occurrences of Endangered Invertebrate Animals				0	0	0	0	0	0	0	3	3	6	None	None
Total Occurrences of Threatened Invertebrate Animals				1	1	1	1	1	1	1	6	6	18	None	None
Total Occurrences of Special Concern Invertebrate Animals				5	5	6	5	9	6	11	3	3	17	None	None

Sources: Minnesota DNR 2016e; Illinois DNR 2016; Iowa DNR 2016a; North Dakota GFP 2016, Wisconsin DNR 2016.

Table M-1. Number of Occurrences of Rare Invertebrate Animals for the Applicant’s Preferred Route, Existing Line 3, and System Alternative SA-04

Common Name	Scientific Name	State	State Status ^a	Applicant's Preferred Route ^b				Existing Line 3		System Alternative SA-04 ^d			Rail ^e	Truck ^e	
				Con WA	Op ROW	Total ^c		0.5 mile	Operations	0.5 mile	Con	Op			0.5 mile
						Con	Op								

Notes:

Species listing may occur more than once. Blank = no occurrence.

a State Status: END = Endangered, SPC = Species of Concern, THR = Threatened, NA = not applicable counted as SPC

b Enbridge provided footprints: Con WA = construction work area; Op ROW= operations right-of-way for Minnesota (note within 120-foot-wide construction work area for North Dakota and Wisconsin)

c Minnesota Only: Con = sum of pipeline construction work area, ATWS, Temporary Access Roads; Op = sum of pipeline permanent right-of-way, Permanent Access Roads, Pump Stations, Valves

d Con = Estimated construction impacts in numbers of occurrences acres based on 120-foot-wide construction work area, Op = Estimated operations impacts in numbers of occurrences based on 50-foot-wide right-of-way

e Based on review for presence absence based on available information on general locations for infrastructure

Table M-2. Number of Occurrences of Rare Vertebrate Animals for the Applicant’s Preferred Route and System Alternative SA-04

Common Name	Scientific Name	State	State Status ^a	Applicant’s Preferred Route ^b					Existing Line 3		System Alternative SA-04 ^d			Rail ^e	Truck ^e
				Con WA	Op ROW	Total ^c		0.5 mile	Operations	0.5 mile	Con	Op	0.5 mile		
						Con	Op								
Mammals															
Big brown bat	<i>Eptesicus fuscus</i>	MN	SPC	4	3	4	3	7		1					
Little brown myotis	<i>Myotis lucifugus</i>	MN	SPC	7	6	8	6	11		1					
Northern long-eared bat	<i>Myotis septentrionalis</i>	MN	SPC	13	12	16	15	27	1	3					
Northern long-eared myotis	<i>Myotis septentrionalis</i>	IL	THR								1	1	2		
Prairie vole	<i>Microtus ochrogaster</i>	MN	SPC					1							
Birds															
Acadian flycatcher	<i>Empidonax virescens</i>	MN	SPC										1		
Bald eagle	<i>Haliaeetus leucocephalus</i>	IL	RemTHR								1	1	4		
Bald eagle	<i>Haliaeetus leucocephalus</i>	IA	SPC										2		
Burrowing owl	<i>Athene cunicularia</i>	MN	END								1	1	1		
Cerulean warbler	<i>Setophaga cerulea</i>	MN	SPC										3		
Chestnut-collared longspur	<i>Calcarius ornatus</i>	MN	END										1		
Connecticut warbler	<i>Oporornis agilis</i>	WI	SPC					1		1					
Greater prairie-chicken	<i>Tympanuchus cupido</i>	MN	SPC	8	6	9	8	11					1		
King rail	<i>Rallus elegans</i>	IL	END										1		
Le Conte’s sparrow	<i>Ammodramus leconteii</i>	WI	SPC					1		1					
Loggerhead shrike	<i>Lanius ludovicianus</i>	MN/IL	END										3		
Louisiana waterthrush	<i>Parkesia motacilla</i>	MN	SPC										1		
Marbled godwit	<i>Limosa fedoa</i>	MN	SPC										1		
Nelson’s sparrow	<i>Ammodramus nelsoni</i>	MN	SPC	2	2	2	2	2	3	3					
Northern goshawk	<i>Accipiter gentilis</i>	MN	SPC					1							
Red-shouldered hawk	<i>Buteo lineatus</i>	MN	SPC					1							
Short-eared owl	<i>Asio flammeus</i>	MN	SPC	1	1	1+	1	1	1	1					
Trumpeter swan	<i>Cygnus buccinator</i>	MN	SPC					2	1	1					
Upland sandpiper	<i>Batramia longicauda</i>	IL	END										1		
Yellow rail	<i>Coturnicops noveboracensis</i>	MN	SPC						1	1					
Amphibians and Reptiles															
Four-toed salamander	<i>Hemidactylum scutatum</i>	MN	SPC					1							
Blanding’s turtle	<i>Emydoidea blandingii</i>	MN/IA	THR										2		
Blanding’s turtle	<i>Emydoidea blandingii</i>	IL	END								1	1	3		
North American racer	<i>Coluber constrictor</i>	MN	SPC								1	1	2		

Table M-2. Number of Occurrences of Rare Vertebrate Animals for the Applicant’s Preferred Route and System Alternative SA-04

Common Name	Scientific Name	State	State Status ^a	Applicant's Preferred Route ^b					Existing Line 3		System Alternative SA-04 ^d			Rail ^e	Truck ^e
				Con WA	Op ROW	Total ^c		0.5 mile	Operations	0.5 mile	Con	Op	0.5 mile		
						Con	Op								
Ornate box turtle	<i>Terrapene ornata</i>	IA/IL	THR								1	1	3		
Plains hog-nosed snake	<i>Heterodon nasicus</i>	IL	THR										1		
Smooth softshell	<i>Apalone mutica</i>	MN	SPC								1	1	1		
Wood Turtle	<i>Glyptemys insculpta</i>	WI	THR					1		1					
Fish															
American brook lamprey	<i>Lampetra appendix</i>	IA	THR										1		
Banded killifish	<i>Fundulus diaphanous</i>	IL	THR										1		
Black buffalo	<i>Ictiobus niger</i>	MN	THR								1	1	1		
Blacknose shiner	<i>Notropis heterolepis</i>	IL	END								1	1	1		
Blue sucker	<i>Cycleptus elongatus</i>	MN	SPC								1	1	1		
Greater redhorse	<i>Moxostoma valenciennesi</i>	IL	END										2		
Least darter	<i>Etheostoma microperca</i>	MN	SPC	1	1	1	1	2			1	1	1		
Ozark minnow	<i>Notropis nubilus</i>	MN	SPC								1	1	1		
Pallid shiner	<i>Hybopsis amnis</i>	IL	END										1		
Pugnose shiner	<i>Notropis anogenus</i>	MN	THR	1	1	1	1	1							
Redfin shiner	<i>Lythrurus umbratilis</i>	MN	SPC										1		
River redhorse	<i>Moxostoma carinatum</i>	IL	THR										1		
Slender madtom	<i>Noturus exilis</i>	MN	END										1		
Total Number of Rare Vertebrate Species				8	8	8	8	16	5	10	12	12	31	None	None
Total Occurrences Rare Vertebrate Animals				37	32	42	37	71	7	14	12	12	47	None	None
Total Occurrences Endangered Vertebrate Animals				0	0	0	0	0	0	0	3	3	15	None	None
Total Occurrences Threatened Vertebrate Animals				1	1	1	1	2	0	1	3	3	12	None	None
Total Occurrences Special Concern Vertebrate Animals				36	31	41	36	69	7	13	6	6	20	None	None

Sources: Minnesota DNR 2016e; Illinois DNR 2016; Iowa DNR 2016a; North Dakota GFP 2016; Wisconsin DNR 2016.

Notes:

Species listing may occur more than once. Blank = no occurrence.

a State Status: END = Endangered, SPC = Species of Concern, THR = Threatened, RemTHR = removed Threatened counted as SPC

b Enbridge provided footprints: Con WA = construction work area; Op ROW= operations right-of-way for Minnesota (note within 120-foot-wide construction work area for North Dakota and Wisconsin)

c Minnesota Only: Con = sum of pipeline construction work area, ATWS, Temporary Access Roads; Op = sum of pipeline permanent right-of-way, Permanent Access Roads, Pump Stations, Valves

d Con = Estimated construction impacts in numbers of occurrences acres based on 120-foot-wide construction work area, Op = Estimated operations impacts in numbers of occurrences based on 50-foot-wide right-of-way

e Based on review for presence absence based on available information on general locations for infrastructure

Table M-3. Number of Occurrences of Rare Plants for the Applicant’s Preferred Route and System Alternative SA-04

Common Name	Scientific Name	State	State Status ^a	Applicant’s Preferred Route ^b					Existing Line 3		System Alternative SA-04 ^d			Rail ^e	Truck ^e
				Con WA	Op ROW	Total ^c		0.5 mile	Operations	0.5 mile	Con	Op	0.5 mile		
						Con	Op								
Nonvascular Plants															
A species of lichen	<i>Buellia nigra</i>	MN	SPC										1		
A species of liverwort	<i>Trichocolea tomentella</i>	MN	THR					1							
Vascular Plants															
American ginseng	<i>Panax quinquefolius</i>	MN	SPC										1		
Barren strawberry	<i>Waldsteinia fragarioides</i> var. <i>fragarioides</i>	MN	SPC						1	1					
Beaked spikerush	<i>Eleocharis rostellata</i>	MN	THR	1	1	1	1	2	1	2				PP	PP
Blue sage	<i>Salvia azurea</i>	IL	THR										1		
Blunt sedge	<i>Carex obtusata</i>	MN	SPC	1	1	1	1	1	1	1					
Bog bluegrass	<i>Poa paludigena</i>	MN	THR	1	1	1	1	1							
Bog birch	<i>Betula pumila</i>	IA	THR										1		
Bristle-berry	<i>Rubus fulleri</i>	MN	THR					1							
Broomrape	<i>Orobanche ludoviciana</i>	IL	THR								1		1		
Buffalo grass	<i>Buchloe dactyloides</i>	MN	SPC								1	1	1		
Butternut	<i>Juglans cinerea</i>	MN	END	1	1	1	1	1							
Cleft phlox	<i>Phlox bifida</i>	IA	SPC										2		
Clinton’s bulrush	<i>Trichophorum clintonii</i>	MN	THR	-	-	-	-	1							
Clustered bur-reed	<i>Sparganium glomeratum</i>	WI	THR	1	1	1	1	4	1	4					
Cutleaf ironplant	<i>Xanthisma spinulosum</i> var. <i>spinulosum</i>	MN	SPC										1		
Dwarf grape fern	<i>Botrychium simplex</i>	IL	END										1		
Edible valerian	<i>Valeriana edulis</i> var. <i>ciliata</i>	MN	THR										2		
English sundew	<i>Drosera anglica</i>	MN	SPC							1					
False mallow	<i>Malvastrum hispidum</i>	IL	END								1	1	1		
False mountain willow	<i>Salix pseudomonticola</i>	MN	SPC	2	1	2	1	2	1	2					
Few-flowered spikerush	<i>Eleocharis quinqueflora</i>	MN	SPC	2	2	2	2	3	3	4				PP	PP
Flat top white aster	<i>Aster pubentior</i>	IA	SPC										1		
Flax-leaved aster	<i>Aster linariifolius</i>	IA	THR										2		
Goblin fern	<i>Botrychium mormo</i>	MN	THR							1					
Grassleaf rush	<i>Juncus marginatus</i>	IA	SPC										1		
Gray ragwort	<i>Packera cana</i>	MN	END					1		1					
Green dragon	<i>Arisaema dracontium</i>	MN	SPC										1		

Table M-3. Number of Occurrences of Rare Plants for the Applicant’s Preferred Route and System Alternative SA-04

Common Name	Scientific Name	State	State Status ^a	Applicant's Preferred Route ^b					Existing Line 3		System Alternative SA-04 ^d			Rail ^e	Truck ^e
				Con WA	Op ROW	Total ^c		0.5 mile	Operations	0.5 mile	Con	Op	0.5 mile		
						Con	Op								
Hair-like beak rush	<i>Rhynchospora capillacea</i>	MN	THR			1	1	1	1	2				PP	PP
Hair-like beak rush (Beakrush)	<i>Rhynchospora capillacea</i>	IA	THR										1		
Handsome sedge	<i>Carex formosa</i>	MN	END			1		2		2					
Hedge hyssop	<i>Gratiola quartermaniae</i>	IL	END										1		
Hidden-fruited bladderwort	<i>Utricularia geminiscapa</i>	MN	THR							1					
Kentucky coffee tree	<i>Gymnocladus dioica</i>	MN	SPC										1		
Lapland buttercup	<i>Ranunculus lapponicus</i>	MN	SPC							1					
Leafy prairie clover	<i>Dalea foliosa</i>	IL	END										1		
Least moonwort	<i>Botrychium simplex</i>	MN	SPC	3	1	3	1	4	5	12					
Mamillate spike-rush	<i>Eleocharis mamillata</i>	WI	SPC	1	1	1	1	1	1	1					
Marsh grass-of-Parnassus	<i>Parnassia palustris</i>	WI	THR					1		1					
McCalla's willow	<i>Salix maccalliana</i>	MN	SPC	1		1		3		3				PP	PP
Meadow beauty	<i>Rhexia virginica</i>	IA	THR										2		
Mingan moonwort	<i>Botrychium minganense</i>	MN	SPC						4	6					
Narrow triangle moonwort	<i>Botrychium lanceolatum</i> ssp. <i>angustisegmentum</i>	MN	THR	3	2	3	2	5		1					
Neat spike-rush	<i>Eleocharis nitida</i>	WI	END	2	2	2	2	5	2	5					
Nodding wild onion	<i>Allium cernuum</i>	MN	SPC										1		
Northern single-spike sedge	<i>Carex scirpoidea</i>	MN	SPC	2	2	2	2	5	2	5					
Northwestern sticky aster	<i>Canadanthus modestus</i>	WI	SPC					1		1					
Pale green orchid	<i>Platanthera flava</i>	IA	END										3		
Pale moonwort	<i>Botrychium pallidum</i>	MN	SPC						4	5					
Plains sedge	<i>Carex heliophila</i>	IL	END								1	1	1		
Plains wild indigo	<i>Baptisia bracteata</i> var. <i>glabrescens</i>	MN	SPC								1	1	1		
Purple-flowered bladderwort	<i>Utricularia purpurea</i>	MN	END					1							
Quillwort	<i>Isoetes butleri</i>	IL	END								2	1	3		
Ram's head orchid	<i>Cypripedium arietinum</i>	MN	THR							1					
Rattlesnake master	<i>Eryngium yuccifolium</i>	MN	SPC										5		
Red saltwort	<i>Salicornia rubra</i>	MN	THR			1		1		1					
Richardson's rush	<i>Juncus alpinoarticulatus</i>	IL	THR										1		
Sage willow	<i>Salix candida</i>	IA	SPC										3		
Seaside crowfoot	<i>Ranunculus cymbalaria</i>	WI	THR	2	2	2	2	4	2	4					

Table M-3. Number of Occurrences of Rare Plants for the Applicant’s Preferred Route and System Alternative SA-04

Common Name	Scientific Name	State	State Status ^a	Applicant's Preferred Route ^b					Existing Line 3		System Alternative SA-04 ^d			Rail ^e	Truck ^e
				Con	WA	Total ^c		0.5 mile	Operations	0.5 mile	Con	Op	0.5 mile		
						Con	Op								
Slender arrow grass	<i>Triglochin palustris</i>	IA	THR										1		
Slender naiad	<i>Najas gracillima</i>	MN	SPC			1	1	2							
Slender sandwort	<i>Minuartia patula</i>	IL	THR										1		
Small fringed gentian	<i>Gentianopsis procera</i>	IA	SPC										1		
Small white lady's-slipper	<i>Cypripedium candidum</i>	MN	SPC	1	1	1	1	4	1	4	1	1	5		
Small yellow water crowfoot	<i>Ranunculus gmelinii</i>	WI	END	2	2	2	2	3	2	3					
Snow trillium	<i>Trillium nivale</i>	MN	SPC										1		
Soft rush	<i>Juncus effusus</i>	IA	SPC										1		
St. Lawrence grapefern	<i>Botrychium rugulosum</i>	MN	SPC						4	5					
Sterile sedge	<i>Carex sterilis</i>	MN	THR	2	2	2	2	6	2	6			1	PP	PP
Sullivant's milkweed	<i>Asclepias sullivantii</i>	MN	THR										1		
Swamp thistle	<i>Cirsium muticum</i>	IA	SPC										1		
Sweet Colt's Foot	<i>Petasites sagittatus</i>	WI	THR	5	5	5	5	8	5	8				PP	PP
Tea-leaved willow	<i>Salix planifolia</i> ssp. <i>planifolia</i>	WI	THR					1		1					
Torrey's mannagrass	<i>Torreyochloa pallida</i>	MN	SPC	2	2	2	2	2							
Tuberous Indian-plantain	<i>Arnoglossum plantagineum</i>	MN	THR										1		
Twig rush	<i>Cladium mariscoides</i>	MN	SPC					3		3				PP	PP
Valerian	<i>Valeriana edulis</i>	IA	SPC										1		
Vasey's rush	<i>Juncus vaseyi</i>	WI	SPC	3	3	3	3	4	3	4					
White adder's mouth	<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	MN	SPC					1							
White wild indigo	<i>Baptisia lactea</i> var. <i>lactea</i>	MN	SPC										1		
Whorled nutrush	<i>Scleria verticillata</i>	MN	THR					1		1					
Whorled nutrush (Low nut rush)	<i>Scleria verticillata</i>	IA	THR										1		
Wild quinine	<i>Parthenium integrifolium</i>	MN	END										1		
Total Number of Rare Plant Species				20	19	24	21	35	20	35	7	6	42	7	7
Total Occurrences of Rare Plants				38	34	42	35	87	46	104	8	6	60	7	7
Total Occurrences of State Endangered Plants				5	5	6	5	13	4	11	4	3	12	0	0
Total Occurrences of State Threatened Plants				15	14	117	15	35	12	34	1	0	17	4	4
Total Occurrences of State Special Concern Plants				18	14	19	15	36	30	59	3	3	31	3	3

Sources: Minnesota DNR 2016e; Illinois DNR 2016; Iowa DNR 2016a; North Dakota GFP 2016; Wisconsin DNR 2016; Merjent 2016.

Table M-3. Number of Occurrences of Rare Plants for the Applicant’s Preferred Route and System Alternative SA-04

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						Con	Op								

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b Enbridge provided footprints: Con WA = construction work area; Op ROW= operations right-of-way for Minnesota (note within 120-foot-wide construction work area for North Dakota and Wisconsin)

c Minnesota Only: Con = sum of pipeline construction work area, ATWS, Temporary Access Roads; Op = sum of pipeline permanent right-of-way, Permanent Access Roads, Pump Stations, Valves

d Con = Estimated construction impacts in numbers of occurrences acres based on 120-foot-wide construction work area, Op = Estimated operations impacts in numbers of occurrences based on 50-foot-wide right-of-way

e Based on review for presence absence based on available information for general location of required infrastructure in the United States, PP = Potentially Present

Table M-4. Mammal, Amphibian, Reptile, and Bird GAP Species Models Used to Estimate Impacts on Species of Conservation Need for the Applicant's Preferred Route and System Alternative SA-04

Common Name	Scientific Name	Occurrence on State Lists							GAP Model Name
		IL	IA	MN	ND	SD	WI	Total	
MAMMALS									
Arctic Shrew	<i>Sorex arcticus</i>				1			1	mACSHx
American Badger	<i>Taxidea taxus</i>	1						1	mAMBAX
American Marten	<i>Martes americana</i>				1		1	1	mAMMAX
American Pygmy Shrew	<i>Sorex hoyi</i>	1			1			2	mAPSHx
American Water Shrew	<i>Sorex palustris</i>						1	1	mAWSHx
Canada lynx (Fed Status: T)	<i>Lynx canadensis</i>			1				1	mCALYx
Eastern Spotted Skunk	<i>Spilogale putorius</i>		1	1	1			3	mESSKx
Gray Wolf (Fed Status: E)	<i>Canis lupus</i>	1			1	1		3	mGRWOx
Little Brown Bat	<i>Myotis lucifugus</i>			1	1		1	3	mLBMYx
Long-eared Bat	<i>Myotis evotis</i>				1			1	mLEMYx
Long-legged Bat	<i>Myotis volans</i>				1			1	mLLMYx
North American River Otter	<i>Lontra canadensis</i>					1		1	mNAROx
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>					1	1	2	mNFSQx
northern pocket gopher	<i>Thomomys talpoides</i>			1				1	mNPGOx
Silver-haired Bat	<i>Lasionycteris noctivagans</i>					1	1	2	mSHBAX
AMPHIBIANS AND REPTILES									
Four-toed Salamander	<i>Hemidactylum scutatum</i>	1		1			1	3	aFTSAX
Mudpuppy	<i>Necturus maculosus</i>	1	1	1				3	aMUDPx
Wood Frog	<i>Rana sylvatica</i>	1						1	aWOFRx
Blanding's Turtle	<i>Emydoidea blandingii</i>	1	1	1			1	4	rBTURx

Table M-4. Mammal, Amphibian, Reptile, and Bird GAP Species Models Used to Estimate Impacts on Species of Conservation Need for the Applicant's Preferred Route and System Alternative SA-04

Common Name	Scientific Name	Occurrence on State Lists							GAP Model Name
		IL	IA	MN	ND	SD	WI	Total	
common five-lined skink	<i>Plestiodon fasciatus</i>			1				1	rCFLSx
Eastern Massasauga	<i>Sistrurus catenatus catenatus</i>	1					1	2	rMASSx
False Map Turtle	<i>Graptemys pseudogeographica</i>				1	1		2	rFMTUx
Northern Prairie Skink	<i>Plestiodon septentrionalis</i>				1			1	rPRSKx
Ornate Box Turtle	<i>Terrapene ornata</i>	1	1			1	1	4	rOBTUx
Plains Hog-nosed Snake	<i>Heterodon nasicus</i>	1		1	1			3	rPHNSx
Prairie Rattlesnake	<i>Crotalus viridis</i>		1					1	rPRRAX
Prairie Skink	<i>Plestiodon septentrionalis</i>						1	1	rPRSKx
Six-lined Racerunner	<i>Aspidoscelis sexlineata</i>						1	1	rSLRAX
Slender Glass Lizard	<i>Ophisaurus attenuatus</i>	1	1				1	3	rSGLIx
Smooth Softshell	<i>Apalone mutica</i>	1		1	1	1	1	5	rSMSox
Snapping Turtle	<i>Chelydra serpentina</i>				1			1	rSNTUx
Spiny Softshell	<i>Apalone spinifera</i>				1			1	rSPSOx
Spotted Turtle	<i>Clemmys guttata</i>	1						1	rSPTUx
Timber Rattlesnake	<i>Crotalus horridus</i>	1		1			1	3	rTIRAX
Western Hognose Snake	<i>Heterodon nasicus</i>		1					1	rPHNSx
Wood Turtle	<i>Glyptemys [Clemmys] insculpta</i>		1	1			1	3	rWOTUx
BIRDS									
Acadian Flycatcher	<i>Empidonax vireescens</i>	1		1			1	3	bACFLx
American Bittern	<i>Botaurus lentiginosus</i>	1			1		1	3	bAMBIX
Baird's Sparrow	<i>Ammodramus bairdii</i>			1	1	1		3	bBAISx

Table M-4. Mammal, Amphibian, Reptile, and Bird GAP Species Models Used to Estimate Impacts on Species of Conservation Need for the Applicant's Preferred Route and System Alternative SA-04

Common Name	Scientific Name	Occurrence on State Lists							GAP Model Name
		IL	IA	MN	ND	SD	WI	Total	
Bald Eagle	<i>Haliaeetus leucocephalus</i>		1		1	1		3	bBAEAx
Bell's Vireo	<i>Vireo bellii</i>	1		1			1	3	bBEVlx
Black Tern	<i>Chlidonias niger</i>	1	1		1	1	1	5	bBLTEEx
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	1			1			2	bBBCUx
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	1					1	2	bBCNHx
Blue-winged Warbler	<i>Vermivora pinus</i>	1						1	bBWWAx
Bobolink	<i>Dolichonyx oryzivorus</i>	1			1		1	3	bBOBOx
Brown Thrasher	<i>Toxostoma rufum</i>	1						1	bBRTHx
Canada Warbler	<i>Wilsonia canadensis</i>							0	bCAWAx
Cerulean Warbler	<i>Dendroica cerulean</i>	1		1			1	3	bCERWx
Common Tern	<i>Sterna hirundo</i>	1		1			1	3	bCOTEx
Dickcissel	<i>Spiza americana</i>				1		1	2	bDICKx
Ferruginous Hawk	<i>Buteo regalis</i>				1	1		2	bFEHAx
Field Sparrow	<i>Spizella pusilla</i>							0	bFISPx
Golden Eagle	<i>Aquila chrysaetos</i>				1			1	bGOEAx
Golden-winged Warbler	<i>Vermivora chrysoptera</i>						1	1	bGWWAx
Grasshopper Sparrow	<i>Ammodramus savannarum</i>				1		1	2	bGRSPx
Henslow's sparrow	<i>Ammodramus henslowii</i>	1	1	1			1	4	bHESPx
Kentucky Warbler	<i>Geothlypis [Oporornis] formosa</i>	1					1	2	bKEWAx
Least Bittern	<i>Ixobrychus exilis</i>	1					1	2	bLEBIx
Least Tern (Interior, Fed Status: E)	<i>Sterna antillarum athalassos</i>	1	1		1	1		4	bLETEEx

Table M-4. Mammal, Amphibian, Reptile, and Bird GAP Species Models Used to Estimate Impacts on Species of Conservation Need for the Applicant's Preferred Route and System Alternative SA-04

Common Name	Scientific Name	Occurrence on State Lists							GAP Model Name
		IL	IA	MN	ND	SD	WI	Total	
Loggerhead Shrike	<i>Lanius ludovicianus</i>	1		1	1		1	4	bLOSHx
Marbled Godwit	<i>Limosa fedoa</i>			1	1	1		3	bMAGOx
Marsh Wren	<i>Cistothorus palustris</i>							0	bMAWRx
Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>			1	1		1	3	bNSTSx
Northern Flicker	<i>Colaptes auratus</i>							0	bNOFLx
Olive-sided Flycatcher	<i>Contopus cooperi</i>						1	1	bOSFLx
Peregrine Falcon	<i>Falco peregrinus</i>		1	1	1	1	1	5	bPEFAx
Pied-billed Grebe	<i>Podilymbus podiceps</i>							0	bPBGRx
Piping Plover (Fed Status: E/T)	<i>Charadrius melodus</i>	1	1	1	1	1	1	6	bPIPLx
Prairie Falcon	<i>Falco mexicanus</i>				1			1	bPRFAx
Prothonotary Warbler	<i>Protonotaria citrea</i>						1	1	bPROWx
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	1			1		1	3	bRHWOx
[Rufa] Red Knot (Fed Status: T)	<i>Calidris canutus rufa</i>	1			1	1	1	4	bREKNx
Rusty Blackbird	<i>Euphagus carolinus</i>						1	1	bRUBLx
Short-eared Owl	<i>Asio flammeus</i>	1	1	1	1		1	5	bSEOWx
Sprague's pipit (Fed Status: C)	<i>Anthus spragueii</i>			1	1	1		3	bSPPIx
Swainson's Hawk	<i>Buteo swainsoni</i>	1			1			2	bSWHAx
Upland Sandpiper	<i>Bartramia longicauda</i>	1			1		1	3	bUPSAx
Western Grebe	<i>Aechmophorus occidentalis</i>							0	bWEGRx
Willow Flycatcher	<i>Empidonax traillii</i>	1						1	bWIFLx
Wood Thrush	<i>Hylocichla mustelina</i>	1						1	bWOTHx

Table M-4. Mammal, Amphibian, Reptile, and Bird GAP Species Models Used to Estimate Impacts on Species of Conservation Need for the Applicant's Preferred Route and System Alternative SA-04

Common Name	Scientific Name	Occurrence on State Lists							GAP Model Name
		IL	IA	MN	ND	SD	WI	Total	
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	1					1	2	bWEWAx
Yellow Rail	<i>Coturnicops noveboracensis</i>	1		1	1		1	4	bYERAx

Sources: Cardno analysis based on state threatened, endangered, and species of conservation concern lists; USGS-GAP 2016.

Notes:

IL = Illinois, IA = Iowa, ND = North Dakota, SD = South Dakota, MN = Minnesota, WI = Wisconsin, Blank = no occurrence.

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Table M-5. Birds of Conservation Concern Occurring within 1 mile of the Applicant's Preferred Route, Route Alternatives, and System Alternative SA-04

Alternative, Common Name	Scientific Name	Applicant's Preferred Route				Route Alternatives, Clearbrook to Carlton				Existing Line 3	SA-04 – North Dakota to Illinois
		North Dakota border to Clearbrook	Clearbrook to Carlton	Carlton to Wisconsin Border	North Dakota to Wisconsin (full route)	RA-03AM	RA-06-	RA-07-	RA-08		
Area (mi ²)		363.0	721.2	31.6	768.8	907.4	655.9	555.9	550.4	950.4	1,323.6
BCC Species (number)		23	24	15	27	26	22	22	22	26	35
Birds of Conservation Concern (BCC) Seasonal Occurrence											
Acadian Flycatcher	<i>Empidonax virescens</i>										B
American Bittern	<i>Botaurus lentiginosus</i>	B	B	B	B	B	B	B	B	B	B
Baird's Sparrow	<i>Ammodramus bairdii</i>										
Bald Eagle	<i>Haliaeetus leucocephalus</i>	W, B	YR	YR	YR	YR	YR	YR	YR	YR	YR
Bell's Vireo	<i>Vireo bellii</i>										B
Black Tern	<i>Chlidonias niger</i>	B	B	B	B	B	B	B	B	B	B
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	B	B	B	B	B	B	B	B	B	B
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>										B
Blue-winged Warbler	<i>Vermivora pinus</i>										B
Bobolink	<i>Dolichonyx oryzivorus</i>	B	B		B	B	B	B	B	B	
Brown Thrasher	<i>Toxostoma rufum</i>	B	B		B	B	B	B	B	B	
Canada Warbler	<i>Wilsonia canadensis</i>		B	B	B	B	B	B	B	B	
Cerulean Warbler	<i>Dendroica cerulea</i>					B					B
Common Tern	<i>Sterna hirundo</i>		B	B	B	B	B	B	B	B	B
Dickcissel	<i>Spiza americana</i>	B	B		B	B	B	B	B	B	B

Table M-5. Birds of Conservation Concern Occurring within 1 mile of the Applicant's Preferred Route, Route Alternatives, and System Alternative SA-04

Alternative, Common Name	Scientific Name	Applicant's Preferred Route				Route Alternatives, Clearbrook to Carlton				Existing Line 3	SA-04 – North Dakota to Illinois
		North Dakota border to Clearbrook	Clearbrook to Carlton	Carlton to Wisconsin Border	North Dakota to Wisconsin (full route)	RA-03AM	RA-06-	RA-07-	RA-08		
Ferruginous Hawk	<i>Buteo regalis</i>										
Field Sparrow	<i>Spizella pusilla</i>										B
Golden Eagle	<i>Aquila chrysaetos</i>	W			W					W	W
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	B	B	B	B	B	B	B	B	B	
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	B			B					B	B
Henslow's Sparrow	<i>Ammodramus henslowii</i>										B
Hudsonian Godwit	<i>Limosa haemastica</i>	M			M					M	M
Kentucky Warbler	<i>Oporornis formosus</i>										B
Least Bittern	<i>Ixobrychus exilis</i>	B	B	B	B	B	B	B	B	B	B
Loggerhead Shrike	<i>Lanius ludovicianus</i>		B		B	B					B
Marbled Godwit	<i>Limosa fedoa</i>	B	B		B	B	B	B	B	B	B
Marsh Wren	<i>Cistothorus palustris</i>	B	B		B	B	B	B	B	B	
Nelson's Sparrow	<i>Ammodramus nelsoni</i>	B	B		B	B	B	B	B	B	B
Northern Flicker	<i>Colaptes auratus</i>										YR
Olive-sided Flycatcher	<i>Contopus cooperi</i>	B	B	B	B	B	B	B	B	B	
Peregrine Falcon	<i>Falco peregrinus</i>										B
Pied-billed Grebe	<i>Podilymbus podiceps</i>	B	B	B	B	B	B	B	B	B	B
Prairie Falcon	<i>Falco mexicanus</i>										

Table M-5. Birds of Conservation Concern Occurring within 1 mile of the Applicant's Preferred Route, Route Alternatives, and System Alternative SA-04

Alternative, Common Name	Scientific Name	Applicant's Preferred Route				Route Alternatives, Clearbrook to Carlton				Existing Line 3	SA-04 – North Dakota to Illinois
		North Dakota border to Clearbrook	Clearbrook to Carlton	Carlton to Wisconsin Border	North Dakota to Wisconsin (full route)	RA-03AM	RA-06-	RA-07-	RA-08		
Prothonotary Warbler	<i>Protonotaria citrea</i>										B
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	B	B	B	B	B	B	B	B	B	YR
Rusty Blackbird	<i>Euphagus carolinus</i>										W
Short-eared Owl	<i>Asio flammeus</i>	B	B	B	B	B	B	B	B	B	W, B
Sprague's Pipit	<i>Anthus spragueii</i>										
Swainson's Hawk	<i>Buteo swainsoni</i>	B	B		B	B	B	B	B	B	B
Upland Sandpiper	<i>Bartramia longicauda</i>	B	B	B	B	B	B	B	B	B	B
Western Grebe	<i>Aechmophorus occidentalis</i>	B	B		B	B				B	B
Willow Flycatcher	<i>Empidonax traillii</i>					B					B
Wood Thrush	<i>Hylocichla mustelina</i>		B	B	B	B	B	B	B	B	B
Worm-eating Warbler	<i>Helmitheros vermivorum</i>										B
Yellow Rail	<i>Coturnicops noveboracensis</i>	B	B	B	B	B	B	B	B	B	B

Source: USFWS 2016

Notes:

B = Breeding, M = Migration, W = wintering, YR = Year Round, blank = no occurrence.

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