Table 1
Missouri Special Status Species
Habitat by County and Mainline Milepost
Keystone Pipeline Project

Species	Status	Habitat Association	Primary Habitat	County	Miles (mi) of Associated Habitat Crossed by Keystone Pipeline Project					Mainline Milepost(s)
					Grassland (mi)	Forests and Woodlands (mi)	Riparian (mi)	Nonforested Emergent Wetland (mi)[1]	Open Water (mi) (habitat crossed or within 0.5 mi)	
Bald eagle *Haliaeetus leucocephalus*	FT; MO-E	This species typically occurs near large bodies of water that support suitable roosting and foraging habitat. Nest sites typically occur in proximity to open water and generally are found in mature heterogeneous stands of multi-storied trees, but also may nest on cliffs. Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts. Breeding season: January through July. Winter season: November 15 through March 15.	riparian forests, open water	Buchanan Carroll Chariton Clinton Lincoln Montgomery St.Charles					Buchanan: 0.2 (Missouri River, Muskrat Lake, Horseshoe Lake) Carroll: 0 Chariton: 0.7 (Grand River, Chariton River, E. Fork of Little Chariton River, Mussel Fork Brush Creek, Clinton: Middle Fork Little Chariton River, East Fork Little Chariton River) Lincoln: 0.2 (West Fort Cuivre River, Cuivre River) Montgomery: (Middletown Lake) St. Charles: 0.3 (Cuivre River Horseshoe Lake, Mud Lake, Fish Slough, Mississippi River, Missouri River)	Buchanan: 743.4-743.6 (Missouri River), 745.2-745.8 (Muskrat Lake), 745.0-745.7 (Horseshoe Lake) Carroll: N/A Chariton: 835.4-835.5 (Grand River), 852.4-852.5 (Mussel Fork Brush Creek), 857.2-857.3 (Chariton River), 862.9 (M.F. Little Chariton), 866.5 (E.F. Little Chariton) Clinton: N/A Lincoln: 950.3 (W.F. Cuivre River), 967.3-967.4 (Cuivre River) Montgomery: 938.2-338.4 (Middletown Lake) St. Charles: 980.5-981.5 (Cuivre River Horseshoe Lake), 981.5-982.0 (Mud Lake), 982.4-982.5 (Fish Slough), 980.5-1016.6 (Missouri/Mississippi River Floodplain)
Barn owl *Tyto alba*	MO-E	This cavity-nesting species is primarily a bird of open country - residential and agricultural areas, old fields and woodland edges. Nests in buildings, tree cavities, caves, cliff crevices, and cut bank burrows Breeding season: late winter, spring, and/or early summer.	grasslands, woodlands, agriculture	St.Charles	St. Charles: 1.1	St. Charles: 0	St. Charles: 0.6			St. Charles: 977.0-998.0, 1010.8-1016.7
Greater Prairie-chicken *Tympanuchus cupido*	MO-E	Prime habitat for this species includes mid-grass and tall-grass prairies bordered by open oak woodlands, oak forests, and cropland. In northeastern Colorado, they nest in sand-sage prairie and forage in corn and wheat fields. In Missouri, nesting habitat is limited to cropland and nearby prairies mainly on the Osage Plains. Breeding season: March through July.	shortgrass, tallgrass, agriculture	Audrain Carroll	Audrain: 5.9 Carroll: 13.0					Audrain: 890.3-926.7 Carroll: 810.7-834.7
Interior least tern *Sterna antillarum athalassos*	FE; MO-E	Nesting habitat consists of sparsely vegetated sandy, gravelly, or silty, beaches and sandbars within wide, unobstructed river channels or salt flats along lake shorelines and irrigation reservoirs. Nest locations are generally away from the water's edge since nesting typically begins while river flows are high and relatively small amounts of sandy habitat is exposed. Breeding season: May 1 through August 15.	shorelines and sandbars of rivers, lakes, reservoirs	Chariton St.Charles				*Data pending* *Data pending*	Chariton: 0.7 (Grand River, Chariton River, E. Fork of Little Chariton River, Mussel Fork Brush Creek, Middle Fork Little Chariton River, East Fork Little Chariton River) St. Charles: 0.3 (Cuivre River Horseshoe Lake, Mud Lake, Fish Slough, Mississippi River, Missouri River)	Chariton: 835.4-835.5 (Grand River), 852.4-852.5 (Mussel Fork Brush Creek), 857.2-857.3 (Chariton River), 862.9 (M.F. Little Chariton), 866.5 (E.F. Little Chariton); data pending St. Charles: 980.5-981.5 (Cuivre River Horseshoe Lake), 981.5-982.0 (Mud Lake), 982.4-982.5 (Fish Slough), 980.5-1016.6 (Missouri/Mississippi River Floodplain); data pending

[1] Data pending; waiting on completion of wetland/waterbody surveys to determine total wetland habitat crossed.

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					Grassland (mi)	Forests and Woodlands (mi)	Riparian (mi)	Nonforested Emergent Wetland (mi)[1]	Open Water (mi) (habitat crossed or within 0.5 mi)	
King rail *Rallus elegans*	MO-E	This species inhabits fresh and brackish wetlands. King rails prefer wetlands with abundant grasses, sedges, rushes and cattails. Nest sites occur in herbaceous cover over shallow water in river floodplains. The adult King Rail molts completely after nesting and is flightless for nearly a month. Breeding season: April-June.	wetlands	Carroll Lincoln St.Charles				*Data pending* *Data pending* *Data pending*		Carroll: data pending Lincoln: data pending St.Charles: data pending
Northern Harrier *Cicus cyaneus*	MO-E	This species breeds in marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts. Nests on the ground, commonly near low shrubs, in tall weeds or reeds, sometimes in bog; or on top of low bush above water, or on knoll of dry ground, or on higher shrubby ground near water, or on dry marsh vegetation.	marshes, meadows, grasslands, cultivated fields	Carroll	Carroll: 13.0			*Data pending*		Carroll: 810.7-834.7; data pending
Lake sturgeon *Acipenser fulvescens*	MO-E	This species is generally bottom dwelling and occurs in large rivers and shallow areas of large lakes. They are most often associated with silt-free deep run and pool habitats of rivers (i.e., >5 ft deep), and generally avoid aquatic vegetation. Gravelly tributary streams of rivers and lakes serve as spawning habitat, although rocky, wave-swept areas near lake shores and islands serve as spawning habitat when preferred habitats are unavailable. Spawning period: late-spring.	large rivers and lakes, gravelly substrate	St. Charles					St. Charles: 1.1 (Mississippi River)	St Charles: 1016.5-1017.6 (Mississippi River)
Pallid sturgeon *Scaphirhynchus albus*	FE; MO-E	This species is distributed from the headwaters of the Missouri River (Fort Benton-Great Falls, Montana) through the Mississippi River to New Orleans, Louisiana. It inhabits bottom areas of large turbid rivers that have strong current and a firm sandy substrate. They also may be found along sandbars and behind wing dikes. Spawning period: April through August.	large, turbid rivers, sand substrate	Buchanan St. Charles					Buchanan: 0.2 (Missouri River) St. Charles: 1.1 (Mississippi River)	Buchanan: 743.4-743.6 (Missouri River) St. Charles: 1016.5-1017.6 (Mississippi River)

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Yellow-crownded night heron *Nyctanassa violacea*	IL-E	This species nests on barrier islands, dredge spoil islands, and bay islands that contain forested wetlands or scrub/shrub thickets. Colonies may be located in dense shrubby thickets, forests with an open understory. They use similar habitat types for nesting and roosting, avoiding areas with insufficient cover. They hunt along the shores of tidal creeks and tide pools within salt and brackish marshes dominated by salt marsh cordgrass.	wetlands, scrub.shrub thickets,	Fayette			Fayette: 3.4	*data pending*		Fayette: 1064.7-1068.1
Lake sturgeon *Acipenser fulvescens*	IL-E	This species is generally bottom dwelling and occurs in large rivers and shallow areas of large lakes. They are most often associated with silt-free deep run and pool habitats of rivers (i.e., >5 ft deep), and generally avoid aquatic vegetation. Gravelly tributary streams of rivers and lakes serve as spawning habitat, although rocky, wave-swept areas near lake shores and islands serve as spawning habitat when preferred habitats are unavailable. Spawning period: late-spring.	large rivers and lakes, gravelly substrate	Madison					Madison: 0.5 (Mississippi River)	Madison: 1016.6-1017.1 (Mississippi River)
Pallid sturgeon *Scaphirhynchus albus*	FE; IL-E	This species is distributed from the headwaters of the Missouri River (Fort Benton-Great Falls, Montana) through the Mississippi River to New Orleans, Louisiana. It inhabits bottom areas of large turbid rivers that have strong current and a firm sandy substrate. They also may be found along sandbars and behind wing dikes. Spawning period: April through August.	large, tubid rivers, sand substrate	Madison Fayette					Madison: 0.5 (Mississippi River) Fayette: 0.1 (Kaskaskia River)	Madison: 1016.6-1017.1 (Mississippi River) Fayette: 1067.6-1067.7 (Kaskaskia River)
Western sand darter *Ammocrypta clarum*	IL-E	This species occurs in medium and large rivers; most commonly in slight to moderate currents over sandy bottoms. It is known to inhabit areas of gravel or silt. The species has also been recorded from quiet margins of drainage canals and shallow backwaters, usually where there is enough current to keep the bottom largely free of silt. Buries in sand.	rivers	Fayette					Fayette: 0.1 (Kaskaskia River)	Fayette: 1067.6-1067.7 (Kaskaskia River)

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Eastern massasauga *Sistrurus catenatus catenatus*	FC; IL-E	This subspecies prefers marshy and swamp areas dominated by cordgrass, sedges, and bulrushes, as well as lowland areas along river and lakes. The snakes hibernate singly in mammal burrows, crayfish burrows, and in crevices or rock piles close to water. Courtship and mating occurs in spring and young are born in late July through early September.	wetland, riparian	Bond Fayette Madison			Bond: 0.8 Fayette: 3.4 Madison: 2.0	*data pending* *data pending* *data pending*		Bond: 1050.7-1055.1; data pending Fayette: 1064.7-1068.1; data pending Madison: 1017.1-1022.8, 1036.4-1041.8; data pending
Kirtland's snake *Clonophis kirtlandi*	IL-T	This species inhabits prairie wetlands, wet meadows, and grassy edges of creeks, ditches, and ponds, usually in association with crayfish burrows. It also has been found in damp habitat remnants in vacant lots of urban settings. Secretive and nocturnal, it shelters beneath logs and surface debris, or in crayfish burrows, by day.	wetlands	Fayette				*data pending*		Fayette: data pending
Illinois chorus frog *Pseudacris streckeri illino*	IL-T	Sand prairies and remnants such as sandy agricultural fields and waste areas. Burrows in sand and emerges after heavy, early spring rains to breed in nearby flooded fields, ditches, and other vernal ponds	sand prairies	Madison	Madison: 0.6					Madison: 1025.4-1025.5, 1038.3-1038.6, 1044.5-1044.8
Decurrent false aster *Boltonia decurrens*	FT; IL-T	The species grows in open muddy bottomlands and is dependent upon disturbance from cyclical flooding to maintain the habitat suitable for its survival. Historically, it was found on the shores of lakes and the banks of streams. Currently, it is most common in disturbed lowland areas where human-caused disturbance provides adequate habitat. Flowers: July-October.	riparian floodplains and muddy bottomlands subject to flooding	Madison			Madison: 2.0	*data pending*		Madison: 1017.1-1022.8, 1036.4-1041.8; data pending
Eastern prairie fringed orchid *Platanthera leucophaea*	FT; IL-E	Mesic-wet calcareous tallgrass sand or silt loam prairie. May also be found in open graminoid portions of lake margins, sedge, meadows, and marshes, wet prairie or open swamps, or bogs and shores. Flowering begins late June to early July. Flowers do not appear annually.	Mesic-wet tallgrass prairie	Bond Fayette Madison Marion				data pending data pending data pending data pending		Bond: data pending Fayette: data pending Madison: data pending Marion: data pending

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					Grassland (mi)	Forests and Woodlands (mi)	Riparian (mi)	Nonforested Emergent Wetland (mi)[1]	Open Water (mi) (habitat crossed or within 0.5 mi)	
Prairie bush-clover *Lespedeza leptostachya*	FT; IL-E	In Illinois, this species is generally found on dry gravel prairies and dry-mesic prairies It is often found on north-facing prairie slopes. On these slopes, it typically occurs either in thin soil at the margins of rocks or in gravelly loamy soil. Flowers in July, August.	prairie	Bond Fayette Madison Marion	0.9 0 0.6 0					Bond: 1059.0-1059.9 Fayette: N/A Madison: 1025.4-1025.5, 1038.3-1038.6, 1044.5-1044.8 Marion: N/A
Prairie Spiderwort *Tradescantia bracteata*	IL-T	Common spiderwort likes sandy soils and seems to be most abundant where grazing is light to moderate. Dry typical prairie and dry sand prairies	grazed prairies, sandy soils	Madison	Madison: 0.6					Madison: 1025.4-1025.5, 1038.3-1038.6, 1044.5-1044.8
Royal Catchfly *Silene regia*	IL-E	This species is found in habitats that include mesic black soil prairies, openings in upland forests, savannas, scrubby barrens, and open areas along roadsides and railroads	prairies, upland forests, savannas, open roadsides	Madison	Madison: 0.6	Madison: 1.0				Madison: 1025.4-1033.4, 1038.3-1044.8
Spring Ladies' Tresses *Spiranthes vernalis*	IL-E	This species is typically found in upland dry to mesic forests, dry to mesic prairies, and successional cultured fields.	upland/mesic forests	Madison			Madison: 2.0	*data pending*		Madison: 1017.1-1022.8, 1036.4-1041.8; data pending

[1] Data pending; waiting on completion of wetland/waterbody surveys to determine total wetland habitat crossed.

Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed											
				ND		SD		NE		KS		MO		IL	
Mammals															
Gray bat *Myotis grisescens*	FE; MO-E; IL-E	This species forages primarily within forested areas along streams and lakes. Winter roosts are in deep vertical caves with domed halls. Large summer colonies utilize caves that trap warm air and provide restricted rooms or domed ceilings. Maternity roosts typically are in caves with stream flow and are separate from summer bachelor roosts.	Riparian woodlands, caves											Madison	6.7
Indiana bat *Myotis sodalis*	FE; MO-E; IL-E	This species forages primarily in riparian forests and flood-plains, as well as in upland forests, low field, and pastures. Maternity roosts are located beneath loose bark of living and dead trees (especially oak and hickory *spp.*). Young are generally born in June. Winter hibernacula occur in caves and mines with 85% of this species population hibernating in Shannon, Washington, and Iron counties, MO.	Riparian woodlands, upland forests, pastures, caves									Audrain Buchanan Caldwell Carroll Chariton Clinton Lincoln Montgomery Randolph St. Charles	3.7 4.5 3.1 3.4 4.1 1.4 10.1 4.6 3.6 0.6	Bond Fayette Madison Marion	1.9 3.4 6.7 0.0
Gray wolf *Canis lupus*	FT; ND-SC	No particular habitat preference. Habitats may include: alpine, desert, conifer forest, hardwood forest, mixed forest, grasslands, savannas, shrubland/ chaparral, tundra, and woodlands.	Any	Cavalier Grnd Fks Nelson Pembina Sargent Walsh	0.0 0.0 0.2 2.9 8.4 1.7										
Fisher *Martes pennanti*	FC; ND-SC	This species inhabits upland and lowland forests, including coniferous, mixed, and deciduous forests. Fishers generally avoid areas with little forest cover or significant human disturbance and conversely prefer large areas of contiguous interior forest.	Forests and woodlands	Pembina	2.9										
Plains spotted skunk *Spilogale putorius interrupta*	SD-SC; MO-E	This species inhabits upland grassland prairie, brushy areas, cultivated land, and forests. Their dens are located below ground in grassy banks, rocky crevices or along fence rows, as well as above ground in hay stacks, woodpiles, hollow logs, trees, or on brushy heaps. Young are born from April to July.	Grasslands, shrublands, upland forests, agriculture edge									Chariton	17.0		
Eastern spotted skunk *Spilogale putorius*	KS-T; MO-E; SD-SC	This species prefers forest edge, prairie, brushy areas, and cultivated land, especially if rock outcrops and shrubs are present. Their dens are located below ground in grassy banks, rocky crevices or along fence rows, as well as above ground in hay stacks, woodpiles, brushy heaps, hollow logs, and abandoned buildings or outbuildings. Young are born in May or June.	Grasslands, shrublands, upland forests, agriculture edge							Brown Doniphan Marshall Nemaha	7.9 4.2 6.9 5.3	St. Charles	1.1		

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Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed													
				ND		SD		NE		KS		MO		IL	
River otter *Lontra Canadensis*	IL-E	Key habitats are rivers, streams, lakes, ponds, marshes, estuaries, and beaver flowages, especially near waterbodies with wooded shorelines or nearby wetlands. When inactive, occupies hollow logs, spaces under roots, logs, or overhangs, abandoned beaver lodges, dense thickets near water, or burrows of other animals; such sites also are used for rearing young	rivers, streams, lakes, ponds, marshes, wetlands					Colfax Stanton	0.5 0.2					Bond Fayette	0.1 3.1
Birds																	
Least bittern *Ixobrychus exilis*	MO-SC; IL-T	Nest in freshwater wetlands with dense, tall growths of emergent vegetation (particularly *Typha* spp, *Carex* spp., *Scirpus* spp., or *Phragmites australis*) interspersed with some woody vegetation and open, fresh water. In the north-central U.S., breeding and nesting may occur from May-July. Incubation lasts for 17-20 days; young usually leave nest by the 13th-15th day.	Wetlands, lakes, open water											Fayette Madison	0.0[1] 0.0[1]
Bald eagle *Haliaeetus leucocephalus*	FT; ND-SC; SD-T; NE-T; KS-T; MO-E; IL-T; OK-T	This species typically occurs near large bodies of water that support suitable roosting and foraging habitat. Nest sites are located in proximity to open water and generally are found in mature heterogeneous stands of multi-storied trees, but also may nest on cliffs. Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts. Breeding season: January through July. Winter season: November 15 through March 15.	Riparian forests, open water	Barnes Cavalier Grnd Fks Nelson Pembina Ransom Sargent Steele Walsh	0.0 0.0 0.0 0.0 0.1 0.2 0.0 0.0 0.3	Beadle Clark Day Hanson Hutchinson Kingsbury Marshall McCook Miner Yankton	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton Wayne	0.0 0.2 0.5 0.0 0.0 0.0 0.2 0.1 0.2 0.0	Brown Doniphan Marshall Nemaha	0.0 0.2 0.1 0.0	Buchanan Carroll Chariton Clinton Lincoln Montgomery St. Charles	0.2 0.0 0.7 0.0 0.2 0.0 0.3	Bond Fayette Madison	0.1 3.1 1.1
Peregrine falcon *Falco peregrinus*	IL-T; NE-SC; KS-E	This species is found over a wide variety of habitats, but are generally located near open water or marshes that support high concentration of shorebirds or waterfowl. Nest sites occur on tall steep-walled cliffs, bridges, or buildings. Preferred foraging habitat includes lakes, rivers, and wet meadows. Breeding season: April 15 to July 15.	Wetlands, lakes, open water							Brown Doniphan Marshall Nemaha	0.0[1] 0.0[1] 0.0[1] 0.0[1]			Madison	2.1[1]
Greater Prairie-chicken *Tympanuchus cupido*	MO-E; ND-SC	Prime habitat for this species includes mid-grass and tall-grass prairies bordered by open oak woodlands, oak forests, and cropland. In western Kansas, they nest in sand-sage prairie and forage in corn and wheat fields. In Missouri, nesting habitat is limited to cropland and nearby prairies mainly on the Osage Plains. Breeding season: March through July.	Shortgrass, tallgrass, upland forest, agriculture									Audrain Carroll	5.9 13		
King rail *Rallus elegans*	MO-E; NE-SC	This species inhabits fresh and brackish wetlands. King rails prefer wetlands with abundant grasses, sedges, rushes and cattails. Nest sites occur in herbaceous cover over shallow water in river floodplains. The adult King Rail molts completely after nesting and is flightless for nearly a month. Breeding season: April-June	Wetlands									Carroll Lincoln St. Charles	0.0[1] 0.0[1] 0.0[1]		

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Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed											
				ND		SD		NE		KS		MO		IL	
Whooping crane *Grus americana*	FE; ND-SC; SD-E; NE-E; OK-E; KS-E	During migration, this species feeds and roosts in a variety of habitats including croplands, large and small freshwater marshes, the margins of lakes and reservoirs, and submerged sandbars in rivers. Spring and Fall migration through the project regions generally occurs from February through April and from October through November, respectively.	Wetlands, riparian, agriculture	Barnes Cavalier Nelson	0.0[1] 0.0[1] 0.2[1]	Beadle Clark Kingsbury Yankton	0.0[1] 0.0[1] 0.0[1] 0.1[1]	Colfax Saline Seward Stanton	0.5[1] 0.2[1] 0.1[1] 0.2[1]	Brown Doniphan Marshall Nemaha	0.0[1] 0.2[1] 0.1[1] 0.0[1]				
Snowy plover *Charadrius alexandrinus*	KS-T	This species inhabits open alkaline flats, mudflats, sandy shorelines, sandbars with little vegetation along rivers, lakes, ponds, and marshlands. Nesting often occurs on white saline flats. Breeding season: May 1 through August 15.	Shorelines, sandbars, wetlands, rivers, lakes, ponds							Brown Doniphan Marshall Nemaha	0.0[1] 0.2[1] 0.0[1] 0.0[1]				
Piping plover *Charadrius melodus*	FT; ND-SC; SD-T; NE-T; KS-T	This species inhabits open sandy areas and saline flats with little vegetation along rivers, lakes, ponds, and marshlands. It nests on sandbars and sand and gravel beaches with short, sparse vegetation along inland lakes, on natural and dredge islands in rivers, on gravel pits along rivers, and on salt-encrusted bare areas on interior alkali ponds and lakes. Sparse clumps of grass or herbaceous vegetation are important habitat components. Breeding season: May 1 through August 15.	Shorelines, sandbars, wetlands, rivers, lakes, ponds	Sargent		Clark Day Kingsbury Yankton	0.0[1] 0.0[1] 0.4[1] 0.1[1]	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton	0.0[1] 0.2[1] 0.5[1] 0.0[1] 0.0[1] 0.0[1] 0.2[1] 0.1[1] 0.2[1]	Brown Doniphan Marshall Nemaha	0.0[1] 0.2[1] 0.1[1] 0.0[1]				
Eskimo curlew *Numenius borealis*	FE; SD-E; KS-E	This species is a nearly extinct spring migrant that feeds and rests in burned-over prairies, agricultural areas, wetlands, and marshes.	Prairies, wetlands, agriculture			Clark	4.5[1]			Brown Doniphan Marshall Nemaha	4.9[1] 1.8[1] 5.6[1] 4.7[1]				
Interior least tern *Sterna antillarum athalassos*	FE; SD-E; NE-E; MO-E; OK-E; KS-E	Nesting habitat consists of sparsely vegetated sandy, gravelly, or silty beaches and sandbars within wide, unobstructed river channels or salt flats along lake shorelines and irrigation reservoirs. Nest locations are generally away from the water's edge since nesting typically begins while river flows are high and relatively small amounts of sandy habitat is exposed. Breeding season: May 1 through August 15.	Shorelines and sandbars or rivers, lakes, reservoirs			Clark Yankton	0.0[1] 0.1[1]	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton	0.0[1] 0.2[1] 0.5[1] 0.0[1] 0.0[1] 0.0[1] 0.2[1] 0.1[1] 0.2[1]	Brown Doniphan Marshall Nemaha	0.0[1] 0.2[1] 0.1[1] 0.0[1]	Chariton St. Charles	0.7[1] 0.3[1]		
Barn owl *Tyto alba*	MO-E; IL-E	This cavity-nesting species is primarily a bird of open country - residential and agricultural areas, old fields and woodland edges. Nests in buildings, tree cavities, caves, cliff crevices, and cut bank burrows Breeding season: late winter, spring, and/or early summer.	Grasslands, woodlands, agriculture									St. Charles	1.7	Fayette Marion	0.0 0.0
Loggerhead shrike *Lanius ludovicianus*	MO-SC; IL-T	This species is found in open areas with mixed shrub/brush hedgerows and scattered thorny trees. Thorny plant species (osage orange, honey locus, multiflora rose, wild crabapple) are important for impaling prey. In MO and IL, nesting peaks in late April, with a second peak in late May in MO.	Shriblands, uplands											Bond Fayette Marion	2.1 0.0 0.0

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				ND	SD	NE	KS	MO	IL
Henslow's sparrow *Ammodramus henslowii*	KS-SC; MO-SC; IL-E	This species breeds in a variety of grassland habitats with tall, dense grass and herbaceous vegetation. Meadows, open grasslands and weedy and abandoned fields, all with wet areas, dense grass-forb mosaics and scattered small woody growths appear to be essential. Breeding season: April-July.	Grasslands, meadows, shrublands						Madison 1.6
Yellow-crownded night heron *Nyctanassa violacea*	IL-E	This species nests on barrier islands, dredge spoil islands, and bay islands that contain forested wetlands or scrub/shrub thickets. Colonies may be located in dense shrubby thickets, forests with an open understory. They use similar habitat types for nesting and roosting, avoiding areas with insufficient cover. They hunt along the shores of tidal creeks and tide pools within salt and brackish marshes dominated by salt marsh cordgrass.	wetlands, scrub-shrub thickets,						Fayette 3.4[1]
Pied-billed grebe *Podilymbus podiceps*	IL-T	This species breeds on seasonal or permanent ponds with dense stands of emergent vegetation, bays and sloughs. Uses most types of wetlands in winter.	ponds, wetlands, sloughs						Fayette 6.5[1]
Northern Harrier *Cicus cyaneus*	MO-E	This species breeds in marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts. Nests on the ground, commonly near low shrubs, in tall weeds or reeds, sometimes in bog; or on top of low bush above water, or on knoll of dry ground, or on higher shrubby ground near water, or on dry marsh vegetation.	marshes, meadows, grasslands, cultivated fields					Carroll 13.0[1]	
Fish									
Chestnut lamprey *Ichthyomyzon castaneus*	KS-T	This species is found in moderate-sized rivers and large creeks. Spawning occurs in smaller tributary streams in swift shallow riffles where the gravel is clean. Eggs are laid in a nest in the river bottom. Spawning period: spring or summer.	Rivers and creeks				Doniphan: Missouri River		
Pallid sturgeon *Scaphirhynchus albus*	FE; SD-E; NE-E; KS-E; MO-E; IL-E	This species is distributed from the headwaters of the Missouri River (Fort Benton-Great Falls, Montana) through the Mississippi River to New Orleans, Louisiana. It inhabits bottom areas of large turbid rivers that have strong current and a firm sandy substrate. They also may be found along sandbars and behind wing dikes. Spawning period: April through August.	Large, turbid rivers, sand substrate		Yankton: James River Missouri River	Cedar: Missouri River Colfax: Platte River	Doniphan: Missouri River	Buchanan: Missouri River St. Charles: Mississippi River	Madison: Mississippi River Fayette: Kaskaskia River
Lake sturgeon *Acipenser fulvescens*	NE-T; MO-E; IL-E	This species is generally bottom dwelling and occurs in large rivers and shallow areas of large lakes. They are most often associated with silt-free deep run and pool habitats of rivers (i.e., >5 ft deep), and generally avoid aquatic vegetation. Gravelly tributary streams of rivers and lakes serve as spawning habitat, although rocky, wave-swept areas near lake shores and islands serve as spawning habitat when preferred habitats are unavailable. Spawning period: late-spring.	Large rivers and lakes, gravelly substrate		Yankton: Missouri River	Cedar: Missouri River		St. Charles: Mississippi River	

[1] Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change.

Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed					
				ND	SD	NE	KS	MO	IL
Flathead chub *Platygobio gracilis*	KS-T	This species occurs from the Rio Grande to the Arctic Circle in small creeks and the largest rivers that have turbid fluctuating water levels and unstable sand bottoms. This species relies on flood flows to spawn successfully. Spawning occurs after water levels have subsided after peak flows, when water temperatures are warmer and substrate is more stable. Relies on flood flows to spawn successfully. Spawns after rivers have subsided following peak flow.	Creeks and rivers with turbid, fluctuating flow and sandy substrates				Nemaha: S.F. Nemaha River Doniphan: Missouri River		
Sturgeon chub *Macrhybopsis gelida*	NE-E; KS-T MO-SC SD-T	This species prefers large turbid sandy rivers over substrate of small gravel and coarse sand. It is often found in areas swept by currents especially at heads of islands or exposed sandbars. Spawning period: late spring to midsummer.	Large sandy rivers, sand/gravel substrate		Yankton: Missouri River	Cedar: Missouri River Colfax County: Platte River	Doniphan: Missouri River	Buchanan: Missouri River	
Sicklefin chub *Macrhybopsis meeki*	NE-SC; KS-E MO-SC SD-E	This species requires continuously and heavily turbid waters of large rivers where it frequents areas of strong current flowing over sand or gravel substrate. Spawning period: spring (likely from late March and May).	Large turbid rivers, sand/gravel substrate		Yankton: Missouri River	Colfax: Platte River	Doniphan: Rock Creek Missouri River	Buchanan: Missouri River	
Western silvery minnow *Hybognathus argyritis*	KS-T; MO-SC	This species prefers protected areas in large, turbid rivers and prairie streams. In streams they are typically found in water less than one foot deep and shallow shore water heavily vegetated with emergent grasses and reeds. In protected areas of larger rivers, they move in large schools of 50 to 100 individuals along the bottom in deep, quiet water. While little is known about spawning, this species probably scatters eggs on silt substrate in quiet water.	Protected areas of rivers and streams				Nemaha: S.F. Nemaha River Doniphan: Missouri River	Buchanan: Missouri River	
Blacknose shiner *Notropis heterolepsis*	ND-SC; NE-E; MO-SC	This species prefers clean weedy lakes and streams.	Lakes, streams			Cedar: Missouri River Stanton: Elkhorn River	Doniphan: Missouri River		
Topeka shiner *Notropis topeka*	FE; SD-SC; KS-T; MO-E	This species inhabits pool and run areas in the headwaters of small prairie streams with high water quality and cool temperatures. These streams generally exhibit intermittent flow during summer; however pools are maintained by spring or groundwater percolation. The substrate of these occupied streams consist mainly of clean gravel, however bedrock and clay hardpan overlain by a thin silt layer are not uncommon. Spawning period: late spring and summer.	Small, cool (often intermittent) prairie streams		Miner: Wolf Creek Hanson: Wolf Creek Hutchinson: Wolf Creek Yankton: James River Missouri River	Cedar: Missouri River Saline: W.F. Big Blue River	Marshall: N. Elm Creek Doniphan: Missouri River	Clinton: Castile Creek Little Platte River Shoal Creek Caldwell: Log Creek Crush Creek Crabapple Creek	
Northern redbelly :e *rosomus eos*	NE-T	This species occurs in a variety of habitats ranging from streams to bog lakes.	Streams to bog lakes			Cedar: Missouri River			
. nescale dace *Phoxinus neogaeus*	NE-T	This species occurs a variety of habitats ranging from streams to bog lakes.	Streams to bog lakes			Cedar: Missouri River			

[1] Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change.

Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed					
				ND	SD	NE	KS	MO	IL
Western sand darter *Ammocrypta clarum*	IL-E	This species occurs in medium and large rivers; most commonly in slight to moderate currents over sandy bottoms. It is known to inhabit areas of gravel or silt. The species has also been recorded from quiet margins of drainage canals and shallow backwaters, usually where there is enough current to keep the bottom largely free of silt. Buries in sand.	Medium to large rivers, sandy substrate						Fayette: Kaskaskia River
Reptiles									
Western fox snake *Elaphe vulpina vulpina*	MO-E	This species inhabits cultivated fields, along wooded stream valleys and in natural prairies that adjoin marshes. It is active between late April and October. Small mammal burrows and brush piles are used as den sites during winter hibernation. Mating begins in April and females lay eggs under logs or leaf litter in May or June. Young hatch in August or September.	Agriculture, riparian woodlands, prairies, wetlands					St. Charles 1.7[1]	
Smooth earth snake *Virginia valeriae*	KS-T	This species inhabits rocky hillsides in moist woodlands and woodland edges in river and stream valleys where they may be found on the slopes under leaf litter, rocks, or logs. During winter, it utilizes deep crevices on rocky hillsides. Mating begins in the spring after emergence from hibernation. Mating may also occur in the fall. Young hatch in August or September.	Riparian woodland, upland forest				Doniphan 2.4		
Eastern massasauga *Sistrurus catenatus catenatus*	FC; MO-E; IL-E	This subspecies prefers marshy and swamp areas dominated by cordgrass, sedges, and bulrushes, as well as lowland areas along river and lakes. The snakes hibernate singly in mammal burrows, crayfish burrows, and in crevices or rock piles close to water. Courtship and mating occurs in spring and young are born in late July through early September.	Wetland, riparian					Chariton 0.7[1]	
Western massasauga *Sistrurus catenatus tergeminus*	NE-T; MO-E	This subspecies is found in open sagebrush prairie, rocky prairie hillsides, and prairie marsh habitats, usually near a water source. The snakes hibernate singly in rodent burrows. Courtship and breeding occur both in the Spring and Fall. Young are born during July or August.	Sagebrush, shrubland, wetland			Gage 0.0[1] Jefferson 3.4[1]		Chariton 12.9[1]	
False map turtle *Graptemys pseudogeo-graphica*	SD-T	This species inhabits slow to swift current rivers and streams, river sloughs, oxbow lakes, ponds, impoundments, and backwaters. They are devoted baskers, often resting just below the surface on submerged branches from fallen trees and projecting logs.	Rivers, streams, sloughs, ponds, backwaters, impoundments		Yankton 0.1				
Kirtland's snake *Clonophis kirtlandi*	IL-T	This species inhabits prairie wetlands, wet meadows, and grassy edges of creeks, ditches, and ponds, usually in association with crayfish burrows. It also has been found in damp habitat remnants in vacant lots of urban settings. Secretive and nocturnal, it shelters beneath logs and surface debris, or in crayfish burrows, by day.	Wetlands						Fayette 0.0[1]

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Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed											
				ND		SD		NE		KS		MO		IL	
Amphibians															
Illinois chorus frog *Pseudacris strecheri illino*	IL-T	Sand prairies and remnants such as sandy agricultural fields and waste areas. Burrows in sand and emerges after heavy, early spring rains to breed in nearby flooded fields, ditches, and other vernal ponds	Sand prairies											Madison	0.6
Invertebrates															
Dakota skipper *Hesperia dacotae*	FC; SD-SC, ND-SC	This species is considered an obligate of undisturbed native prairie. The butterfly inhabits wet lowland prairie dominated by bluestem grasses and dry upland prairie dominated by mixed bluestem and needle stem grasses. Both habitat types contain an abundance of flowering plants and have alkaline soils. Adults emerge in mid-June to early July, and mate during a flight period that lasts for about three weeks.	Lowland and upland prairie	Barnes Ransom Sargent	0.0 0.0 8.4	Clark Day Marshall Yankton	4.5 6.7 5.1 2.1								
American burying beetle *Nicrophorous americanus*	FE; KS-E	This species inhabits upland grasslands or near the edge of grassland/forest. Sandy/clay loam soils and food (carrion) availability are also important. The species appears to prefer loose soil in which to bury carrion. Reproduction occurs from late April through mid August. Reproductive activity includes the burial of a carcass, building of a chamber, and laying eggs.	Grasslands, upland forests							Brown Doniphan Marshall Nemaha	7.9 4.2 6.9 5.3				
...leshell mussel *...ptodea leptodon*	FE; SD-SC; NE-E	Occurs in riffles with moderate to high gradients in creeks to large rivers. Typically associated with riffles, relatively strong currents, and substrate of mud, sand, or assemblages of gravel, cobble, and boulder. Restricted to rivers with relatively good water quality in stretches with stable channels. Little is known concerning the reproduction of this species.	Creeks and rivers with good water quality and stable channels			Yankton	0.2	Cedar	0.2						
Higgins' eye pearlymussel *Lampsilis higginsi*	FE; SD-SC	Found in substrates of mud with a mixture of gravel and stones. Prefers rapidly flowing water. The exact breeding season is unknown.	Fast flowing creeks and rivers, mud substrate			Yankton	0.2	Cedar	0.2						
Winged mapleleaf *Quadrula gragosa*	FE; SD-SC	The species is found in riffles with clean gravel, sand, or rubble bottoms.	Rivers, streams			Yankton	0.1								
Plants															
Decurrent false aster *Boltonia decurrens*	FT; MO-E; IL-T	The species grows in open muddy bottomlands and is dependent upon disturbance from cyclical flooding to maintain the habitat suitable for its survival. Historically, it was found on the shores of lakes and the banks of streams. Currently, it is most common in disturbed lowland areas where human-caused disturbance provides adequate habitat. Flowers: July-October.	Riparian floodplains and muddy bottomlands subject to flooding									St. Charles	0.0[1]	Madison	2.0[1]
Small white lady's-slipper *Cypripedium ...andidum*	NE-T	This species is found in wetland prairie habitats: mesic blacksoil prairie, wet blacksoil prairie, glacial till hill prairie, sedge meadow, calcareous fen, glade. Found on calcareous soils. Flowering occurs May-June.	Wetland prairie					Butler Cedar Colfax Stanton Wayne	0.0[1] 4.3[1] 0.8[1] 1.5[1] 1.3[1]						

[1] Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change.

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Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed											
				ND		SD		NE		KS		MO		IL	
Eastern prairie fringed orchid *Platanthera leucophaea*	FT; IL-E	Mesic-wet calcareous tallgrass sand or silt loam prairie. May also be found in open graminoid portions of lake margins, sedge, meadows, and marshes, wet prairie or open swamps, or bogs and shores. Flowering begins late June to early July. Flowers do not appear annually.	Mesic-wet tallgrass prairie											Bond Fayette Madison Marion	0.0[1] 0.0[1] 0.0[1] 0.0[1]
Western prairie fringed orchid *Platanthera praeclara*	FT; ND-SC; SD-SC; NE-T	Occurs in mesic upland tallgrass prairie in the southern part of its range, often in swales, and wet-mesic tallgrass prairie and sedge meadows in the northern part of its range. Also known from prairies and swales in sand dune complexes that are fed by shallow underground water. Flowers June-July.	Tallgrass prairie, dune complexes	Ransom	0.0	Clark Day Yankton	4.5[1] 6.7[1] 2.1[1]	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton Wayne	0.0[1] 4.3[1] 0.8[1] 0.0[1] 3.4[1] 0.0[1] 0.3[1] 0.0[1] 1.5[1] 1.3[1]						
Prairie bush-clover *Lespedeza leptostachya*	FT; IL-E	In Illinois, this species is generally found on dry gravel prairies and dry-mesic prairies It is often found on north-facing prairie slopes. On these slopes, it typically occurs either in thin soil at the margins of rocks or in gravelly loamy soil. Flowers in July, August.	Prairie											Bond Fayette Madison Marion	0.8 0.0 0.6 0.0
[illegible]ning buffalo [illegible]over *[illegible]ifolium stoloniferum*	FE; MO-E	This species is commonly found in areas of rich soils in the ecotone between open forest and prairie; and moist, partially shaded woodlands- sometimes along stream or river terraces. Also found in areas disturbed by grazing or mowing. This species historically grew along bison trails. Flowers: April-June.	Riparian areas, woodland/prairie ecotones									Lincoln	11.7[1]		
Royal Catchfly *Silene regia*	IL-E	This species is found in habitats that include mesic black soil prairies, openings in upland forests, savannas, scrubby barrens, and open areas along roadsides and railroads	Prairies, upland forests, savannas, open roadsides											Madison	1.6
Prairie Spiderwort *Tradescantia bracteata*	IL-T	Common spiderwort likes sandy soils and seems to be most abundant where grazing is light to moderate. Dry typical prairie and dry sand prairies	Grazed prairies, sandy soils											Madison	0.6
Spring Ladies' Tresses *Spiranthes vernalis*	IL-E	This species is typically found in upland dry to mesic forests, dry to mesic prairies, and successional cultured fields.	Upland/mesic forests											Madison	2.0[1]

[1] Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change.

Table 3
Illinois Special Status Species Listed by County and Habitat Type

County	Grassland	Forests And Woodlands	Riparian	Emergent Wetland	Open Water
Bond	Loggerhead Shrike	Indiana Bat, Loggerhead Shrike	Indiana Bat, Eastern Massasauga	Eastern Massasauga	River Otter, Bald Eagle
Fayette	Barn Owl, Loggerhead Shrike	Indiana Bat, Barn Owl, Loggerhead Shrike	Indiana Bat, Pied-billed Grebe, Yellow Crowned Night Heron, Eastern Massasauga	Least Bittern, Pied-billed Greb, Yellow Crowned Night Heron, Eastern Massasauga, Kirkland's Snake	River Otter, Bald Eagle, Pied-billed Grebe, Pallid Sturgeon, Western Sand Darter
Madison	Illinois Chorus Frog, Prairie Spiderwort, Royal Catchfly	Indiana Bat, Royal Catchfly	Indiana Bat, Peregrine Falcon, Eastern Massasauga, Decurrent False Aster, Spring Ladies' Tresses	Least Bittern, Peregrine Falcon, Eastern Massasauga, Decurrent False Aster, Spring Ladies' Tresses	Bald Eagle, Lake Sturgeon, Pallid Sturgeon
Marion	Barn Owl, Henslow's Sparrow, Loggerhead Shrike	Gray Bat, Indiana Bat, Barn Owl, Henslow's Sparrow, Loggerhead Shrike	Gray Bat, Indiana Bat		

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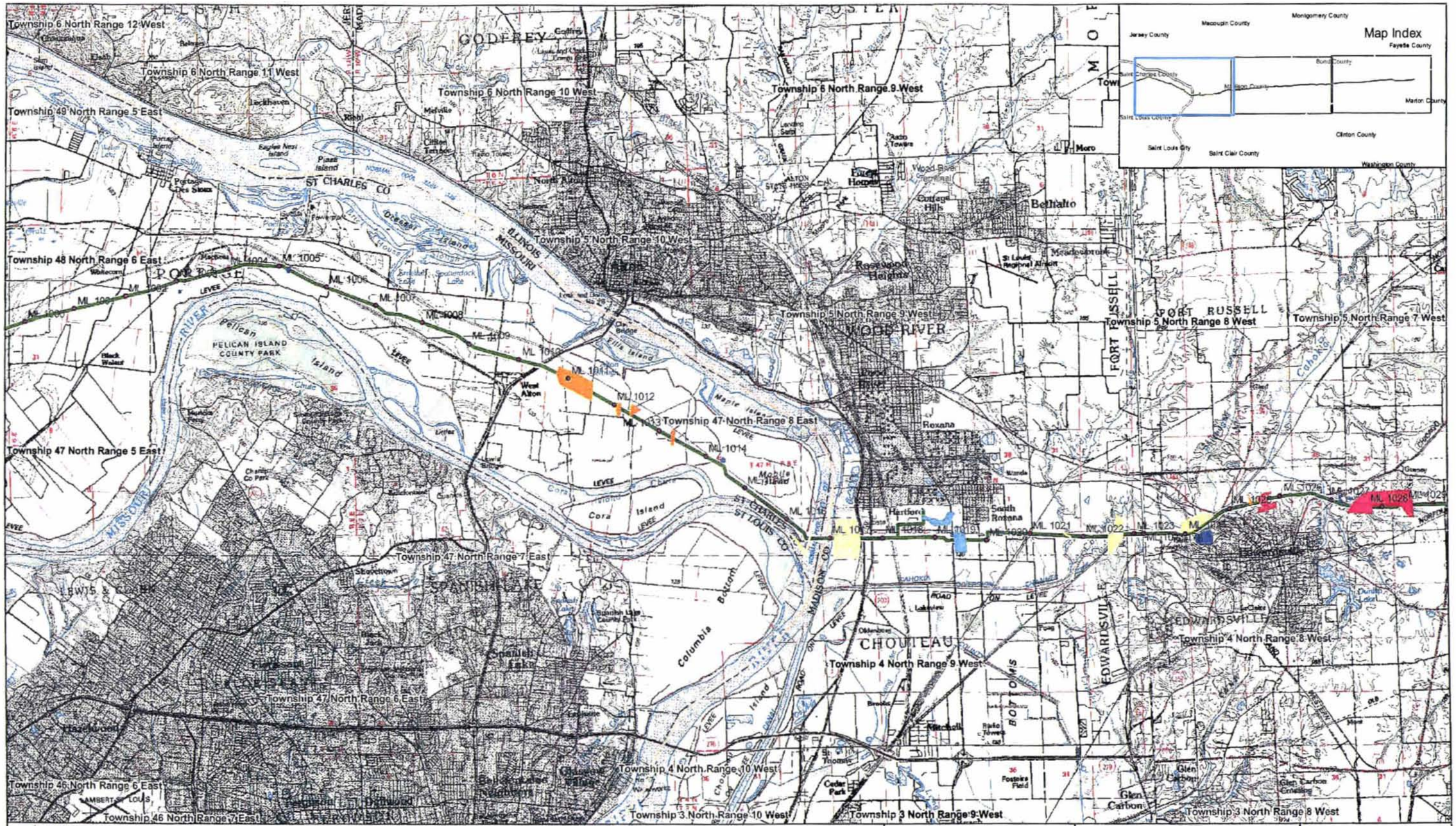

DOS Filing Route
Modified pipeline route
Valve
Pump station
Powerline preferred route
Powerline alternative route
Mainline milepost
Riparian
Forests and Woodland
Grassland
Open Water
Non-forested Emergent Wetland

N

0 0.5 1 Miles

Keystone Pipeline Project

TransCanada
In business to deliver

Map of 1 of 3
Non-agricultural
Habitat
(Illinois)

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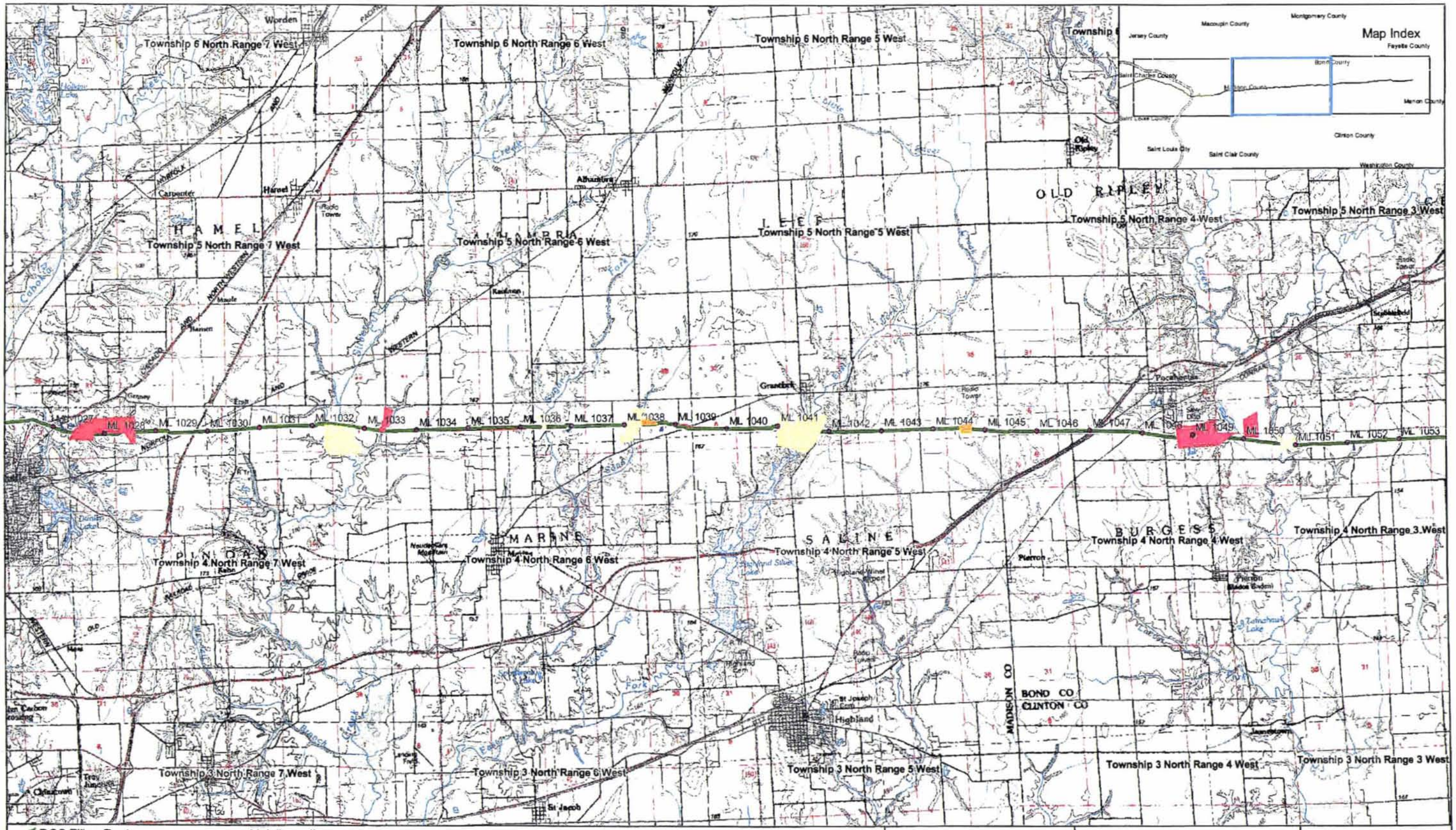

DOS Filing Route
Modified pipeline route
Valve
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Powerline preferred route
Powerline alternative route
Mainline milepost
Riparian
Forests and Woodland
Grassland
Open Water
Non-forested Emergent Wetland

N

0 0.5 1 Miles

Keystone Pipeline Project

TransCanada
in business to deliver

Map of 2 of 3
Non-agricultural
Habitat
(Illinois)

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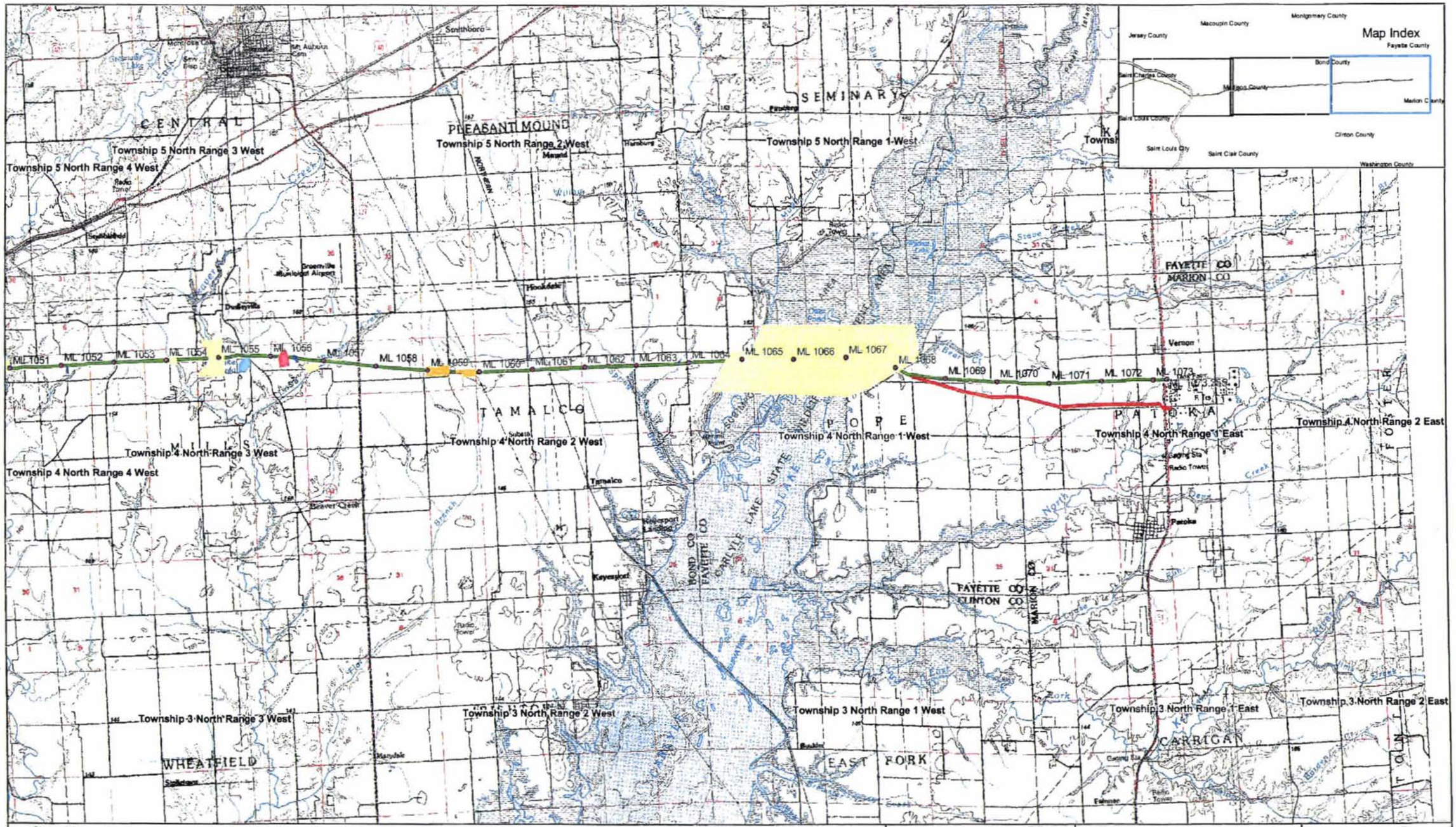

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IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Waubay National Wildlife Refuge
44401 134A Street
Waubay, South Dakota 57273-9910
PH: 605-947-4521
FAX: 605-947-4524

June 8, 2006

Mr. Charles Johnson
ENSR
1601 Prospect Parkway
Fort Collins, Colorado 80525

RE: Keystone US pipeline through North and South Dakota

Dear Mr. Johnson:

Thank you for the opportunity to review the proposed route of the Keystone pipeline through North Dakota and South Dakota. Previously, the U.S. Fish and Wildlife Service (Service) provided ENSR a map of National Wildlife Refuge System lands positioned along the pipeline corridor. The Service has purchased easement interests from private landowners to protect wetlands and grasslands throughout the eastern Dakotas. Development projects, such as the Keystone pipeline, have the potential to negatively impact natural resources protected by these Service easements. Construction of the Keystone pipeline can minimize damages to National Wildlife Refuge System lands by: (1) selecting pipeline routes that avoid easement lands, or (2) when easement lands can not be avoided, utilize construction and restoration techniques that maintain the integrity of protected wetlands and grasslands.

The Service has particular concerns with potential pipeline construction impacts to several ecologically sensitive areas and requests that Keystone US adjust the route of the pipeline in the following areas:

1) Hecla Sandhills. Location (see map): northwestern Marshall County, SD, northeastern Brown County, SD, and southwestern Sargent County, ND. The Hecla Sandhills is a unique land form characterized by sand dunes interspersed with native tall-grass prairie grasslands, including rare plants found no where else in the Dakotas. Wetland complexes are incredibly dense, often with 400 wetlands per square mile. A crude oil spill in the porous soils of the Sandhills could be disastrous to wetlands and groundwater. Recommendation: move the pipeline 4 miles (or more) to the east, out of the

Sandhills.

2) Raymond Prairie Chicken Leks. Location (see map): northwestern Clark County, SD. The Raymond Prairie Chicken Leks are a unique relict of tallgrass prairie surrounded by intensively farmed cropland. These native grasslands provide habitat for one of the few stable populations of greater prairie chickens in the eastern Dakotas. Recommendation: move the pipeline 1-2 miles to the east on to cropland.

3) Nelson and Steele County Wetlands. Location (see map): eastern Nelson and Steele Counties , ND. The proposed pipeline would pass through 9 and 10 separate wetland easement tracts in Nelson County and Steele County, respectively, potentially impacting dozens of wetlands. Recommendation: move the pipeline 5 miles to the east, into Grand Forks County. This location likely would traverse only one easement tract, with no impacts to protected wetlands. It would be important to jog back to the original proposed pipeline location prior to entering Barnes County, as a more eastern alignment would impact several Barnes County easement tracts.

4) Miner County Grassland Easement. Location (see map): west-central Miner County, SD. This native prairie is protected by a Service grassland easement. Recommendation: move the pipeline to the extreme northeastern corner of section 29, T. 106 N., R. 57 W. Keeping the pipeline on line will avoid a South Dakota Game, Fish and Parks Department Game Production Area to the northeast of the grassland easement and a Service Waterfowl Production Area several miles to the south, T. 104 N., R. 57 W., section 10, south ½, Hanson County.

5) Day County Grassland Easements. Location (see map): southwestern Day County, SD. Four tracts of native prairie are protected by Service grassland easements. Recommendation: move the pipeline 0.25 mile, or more, to the west, on to cropland.

The Service realizes that some easement tracts can not be avoided by a project of this scope and pledges to work with ENSR and Keystone US with pipeline siting, construction techniques, and restoration of wetlands and grasslands on individual easement tracts to protect and maintain these resources. Crossing National Wildlife Refuge System lands, including easements, will require easement and right-of-way permits issued by the Service. Significant lead time will be required to ensure these permits can be written, reviewed, and approved prior to construction.

Archeological permits must also be issued for any project that will disturb wetlands or grasslands where the Service has purchased easement interests. Anticipating that the pipeline will cross service easements, we recommend contacting the

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Service Regional Archeologist, Meg VanNess (303-236-8103; Meg_VanNess@FWS.GOV; US Fish and Wildlife Service, Box 25486, Denver Federal Center, Denver, CO 80225). Meg can discuss Service requirements for a survey, the information she will need for permits and her responsibility to coordinate with the State Historical Preservation offices (SHPO).

Thank you for contacting this office prior to undertaking this project. Please contact Doug Leschisin, at 605-947-4521, if any questions come up.

Sincerely,

Larry D. Martin

Larry D. Martin
Project Leader, Waubay National Wildlife Refuge Complex

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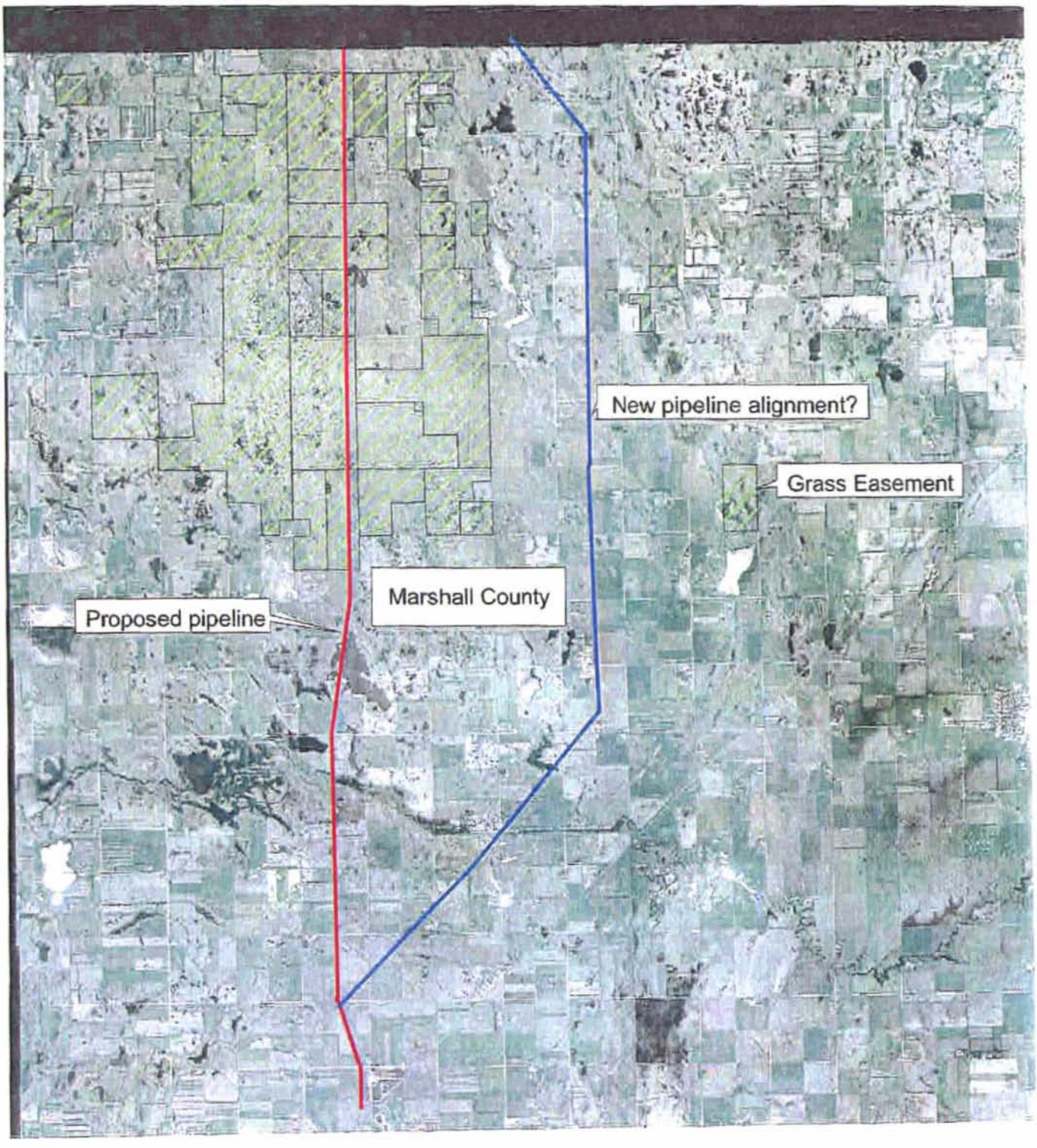

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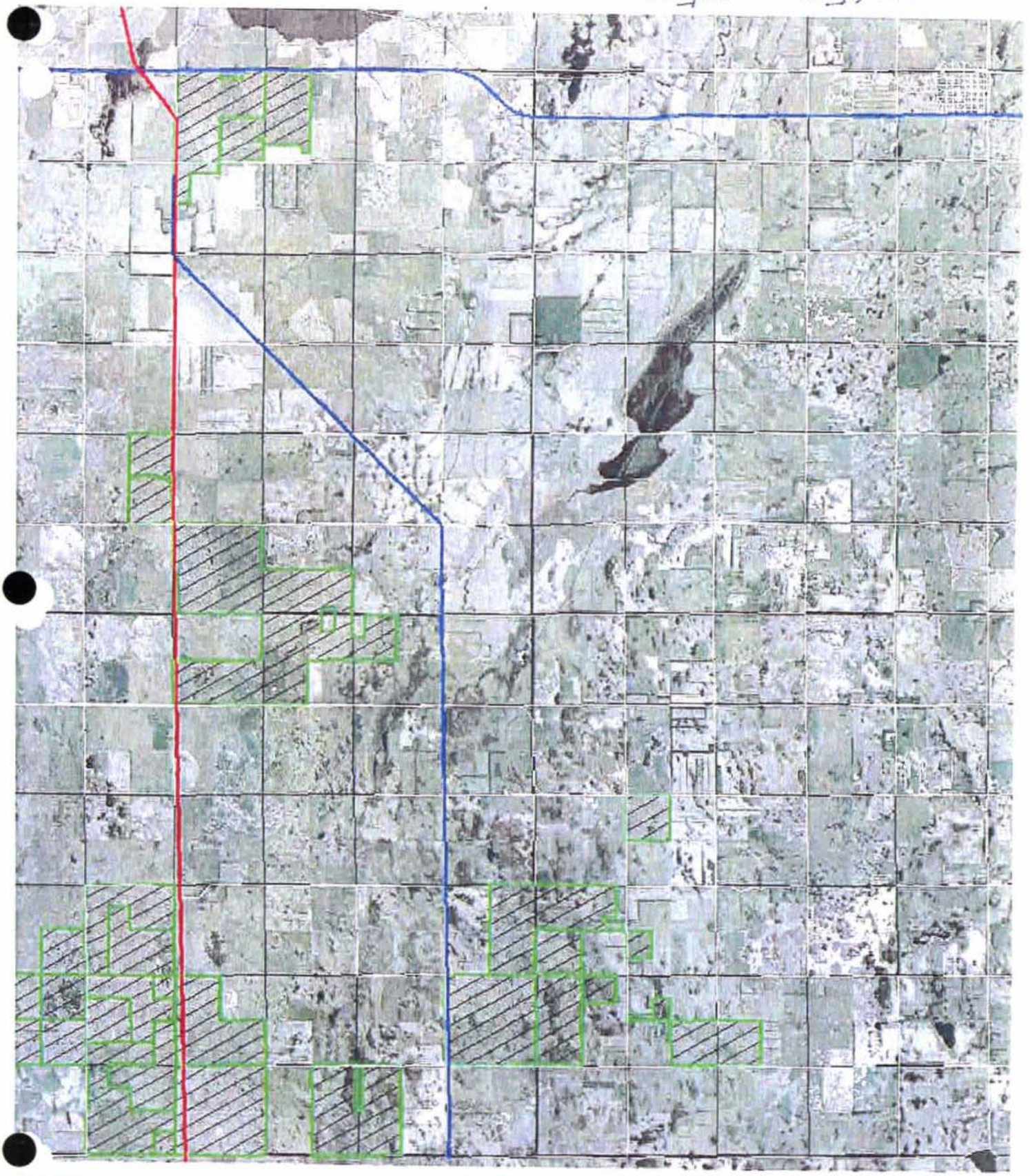
Sargent County, ND



Grassland Easements

Proposed Pipeline Route

Alternate Pipeline Route

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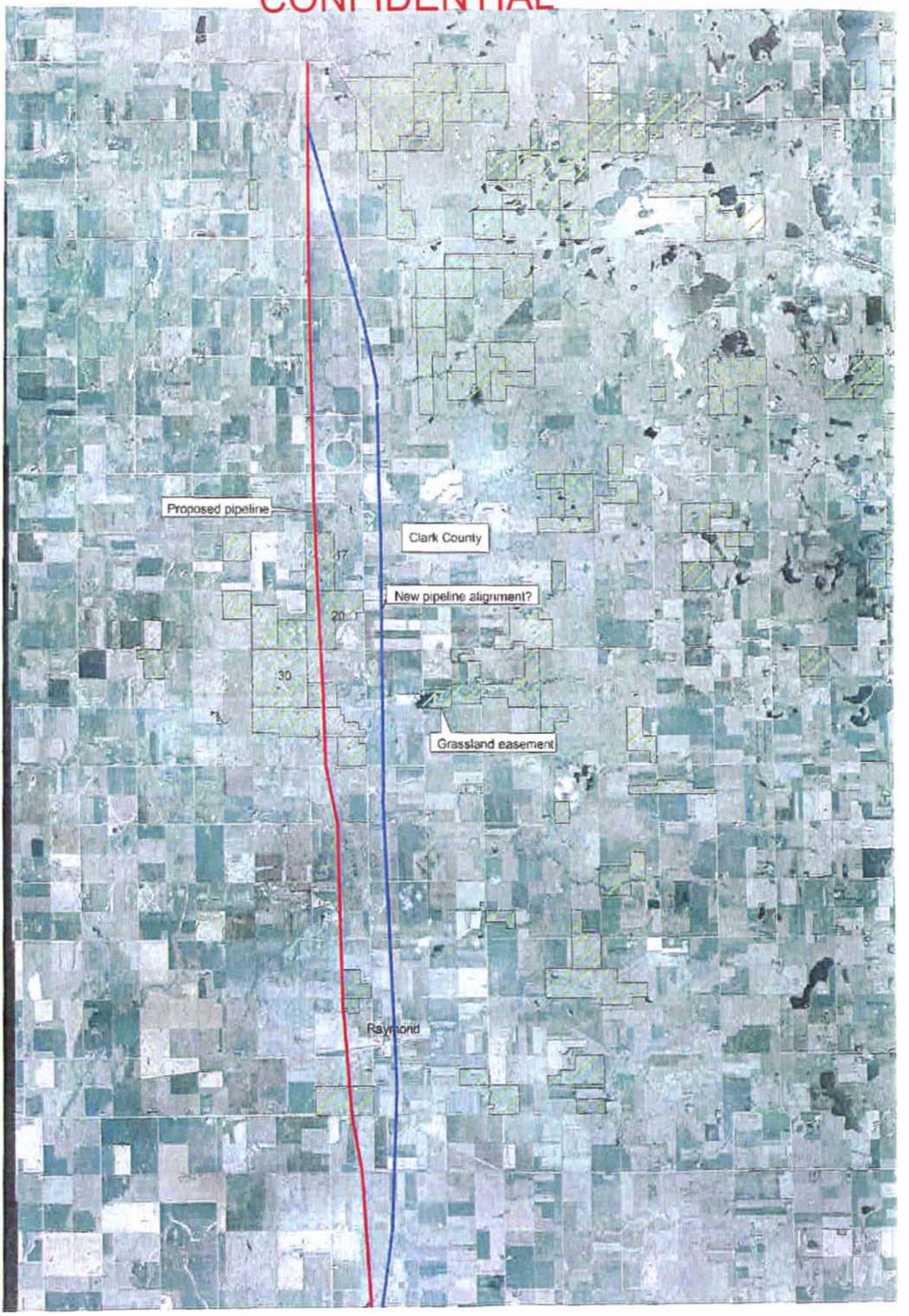

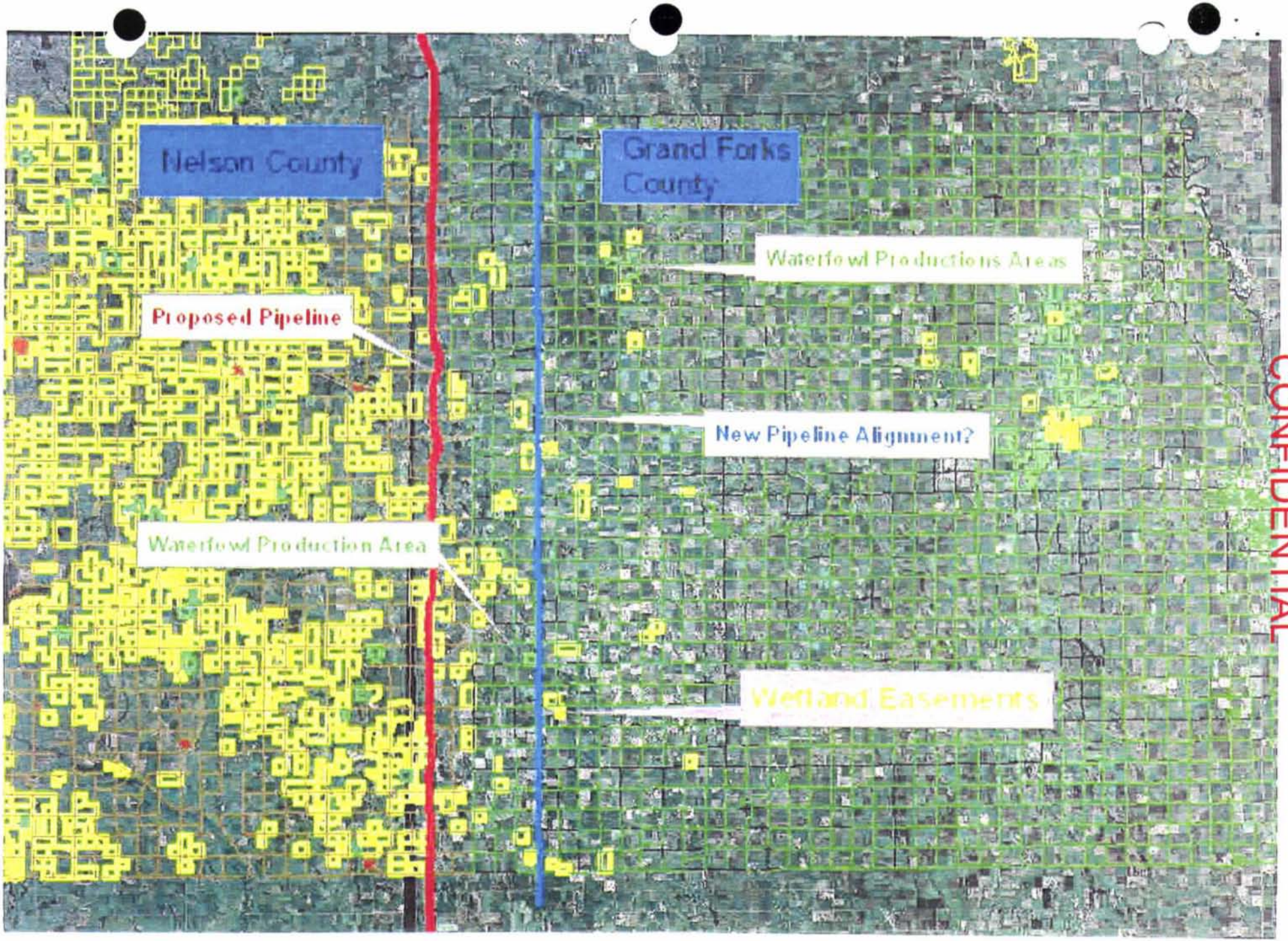

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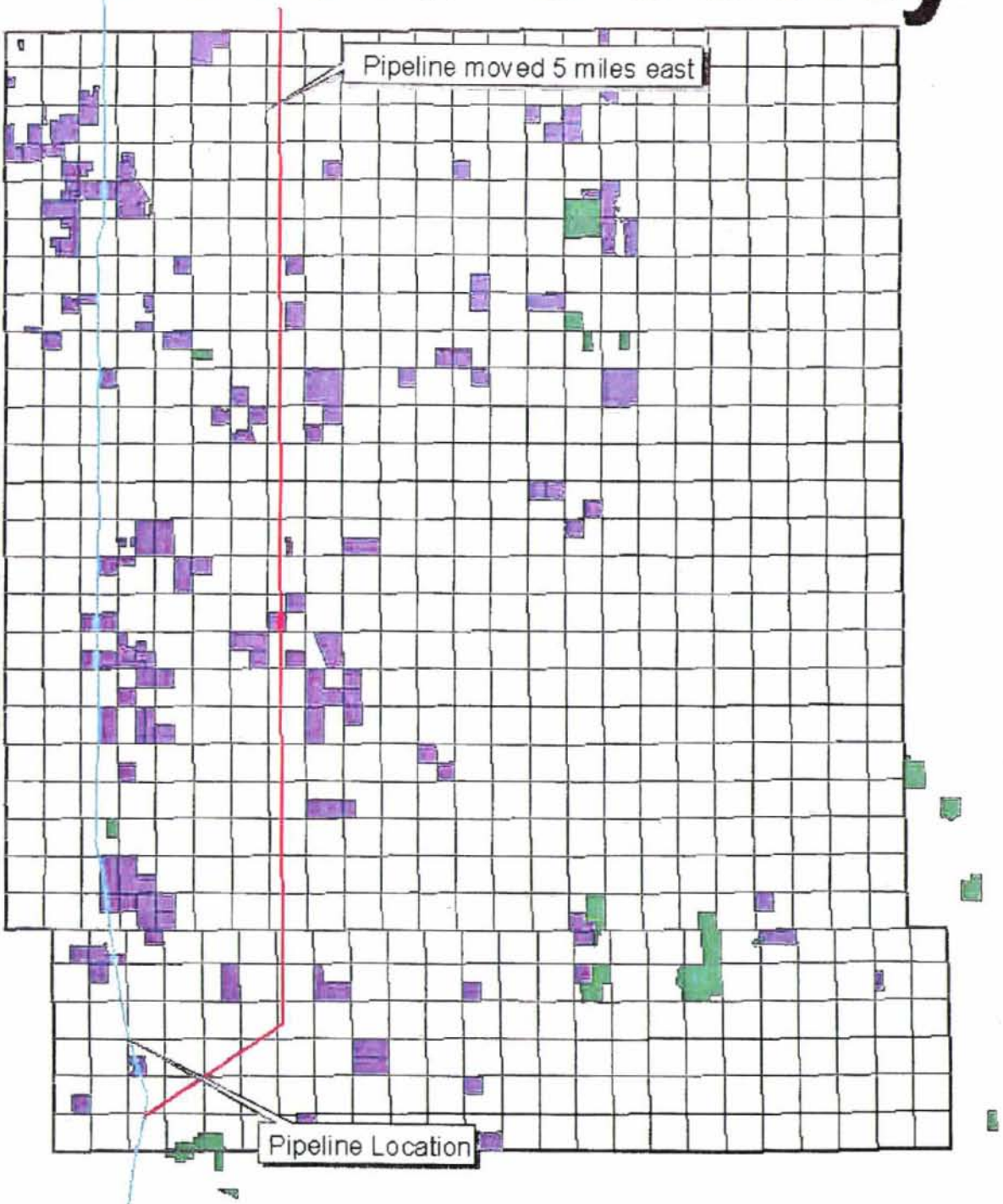
Steele County



Pipeline Location
Section Lines
Steele Wetland Easements
Steele County Boundary
WPA Boundary
WPA

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W E
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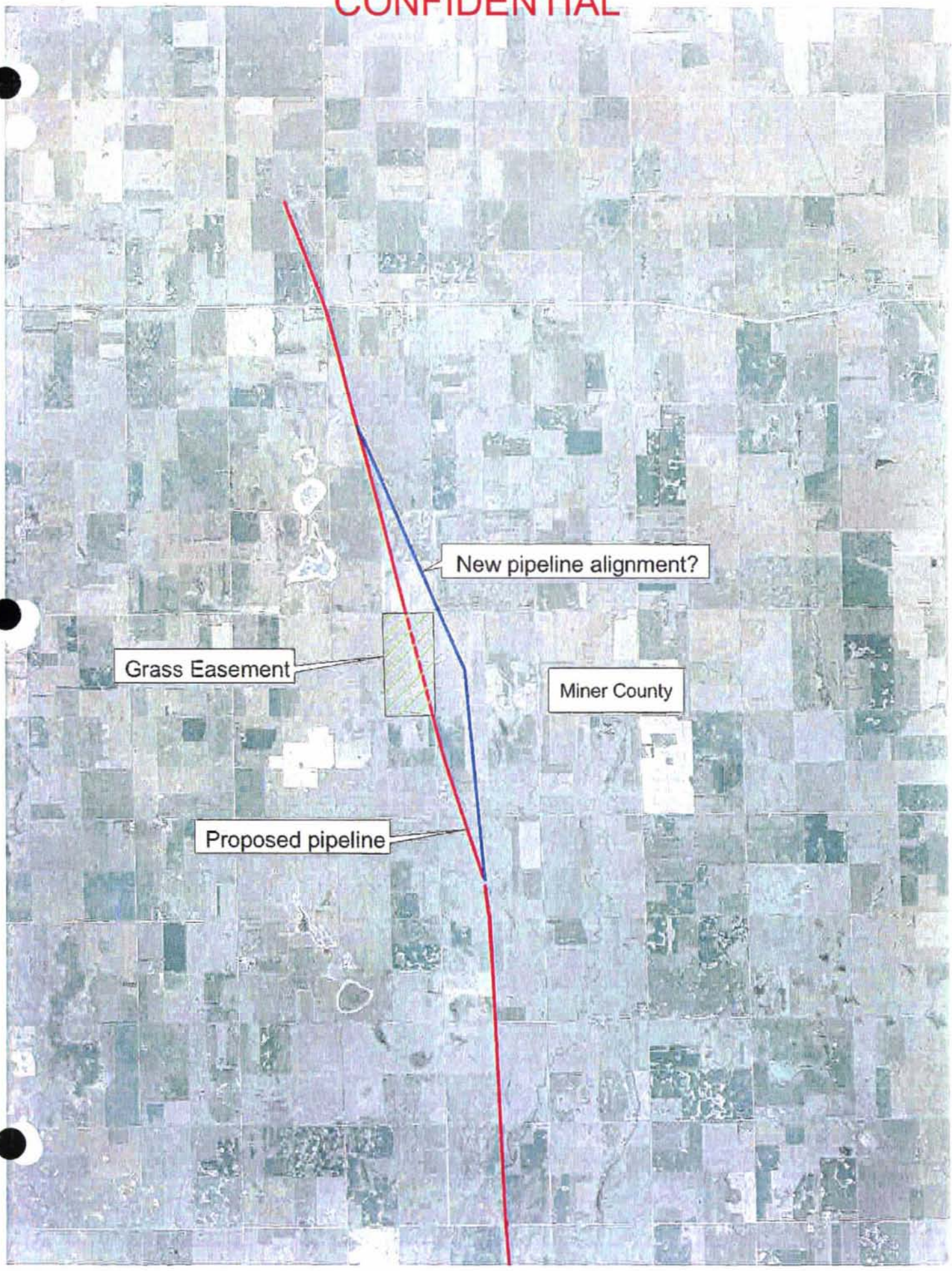

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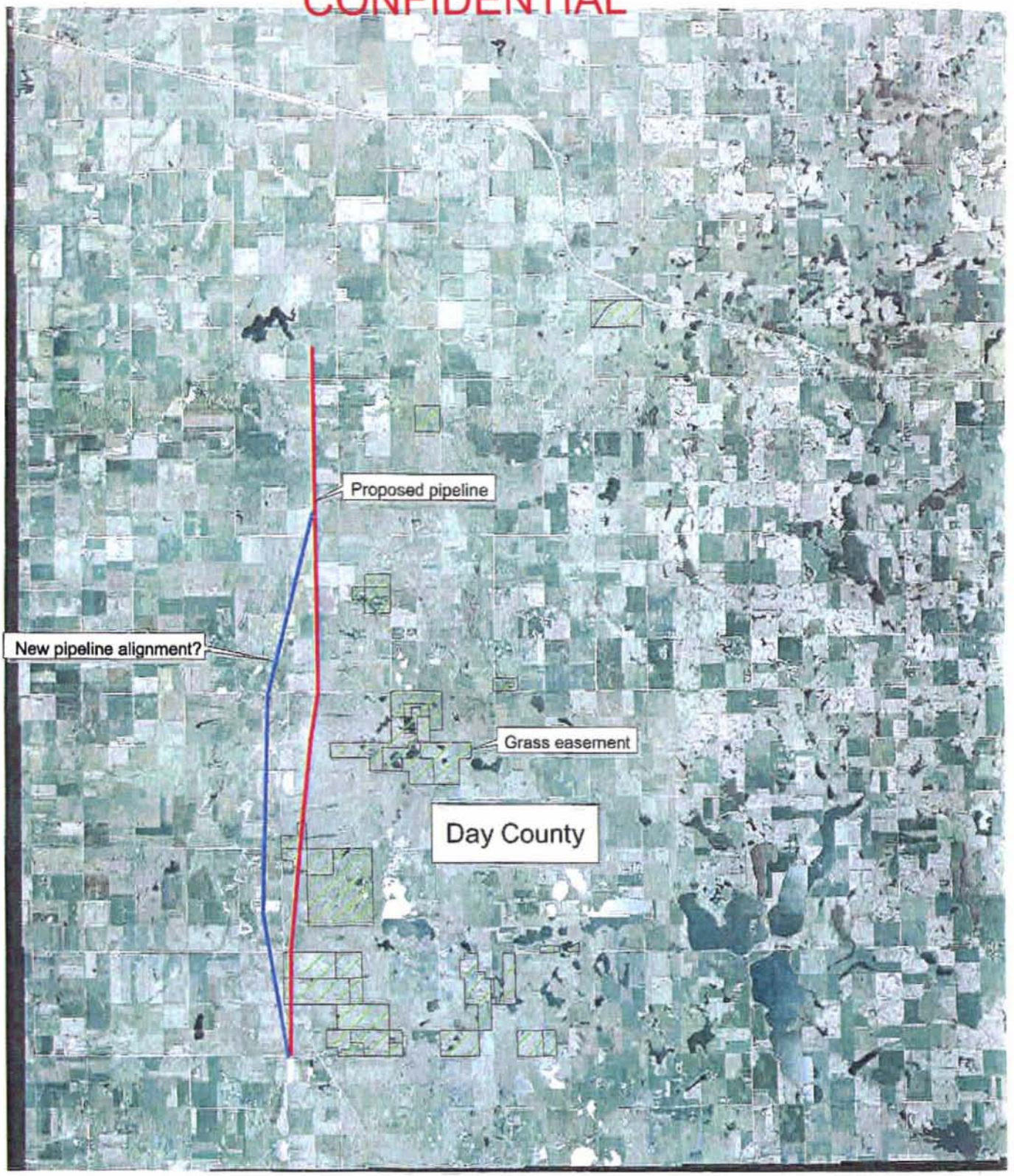

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USFWS Meeting Notes – June 7, 2006

Attendees:

John Cochnar – USFWS, Grand Island, NE
Dirk Peterson – REX-West
Scott Patti – ENSR

- John suggested contacting Dr. Wyatt Hoback at the University of Nebraska at Kearney regarding the American burying beetle.
- Mark Peyton is the contact for the Lake McConaughy Irrigation District.
- Rick Hanson with the USFWS Columbia, MO Field Office likely will serve as the USFWS Indiana Bat contact for the project.
- John suggested clearing and grubbing outside the nesting season (April 1 to July 15 in NE) in prairie and forest lands to assist with adherence to the intent of the MBTA.
- John is not concerned about bird nests in actively cultivated agricultural fields.
- If project timelines do not allow clearing and grubbing outside the nesting season, REX may be able to obtain a depredation permit to address MBTA concerns.
- We outlined our intended approach to the MBTA, specifying that we will be concerning ourselves with PIF and BCC species.
- John said that the following should be the path taken with regard to the MBTA: 1st) Avoidance of nesting season; 2nd) Minimization of impacts; Last Resort) Obtain depredation permit.
- John requested to see the Project's Plan and Procedures – Dirk provided him with the disk with the entire FERC ER filing.
- John said that Mike Fritz with the NGPC is the man to talk to regarding block-cleared areas for black-footed ferret.
- We shared with John our intended approach to obtaining USFWS concurrence: i.e., we told him that we intend to present him with a letter and a biological overview report, complete with a table and our proposed approach to species surveys, what we plan to survey for, where we plan survey for them, when we plan to survey for them, etc. and include a set of maps (preferably aerials) depicting the habitats (e.g., prairie dog colonies, raptor nest locations, potential Indiana bat habitat locations, etc.), and provide a concurrence line for his signature to concur with our proposal.
- John was pleased with our proposed approach.

CONFIDENTIAL

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region

IN REPLY REFER TO:
FWS/R6
ES

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225-0486

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228-1807

APR 2 8 2006

Mr. Charles Johnson
ENSR
1601 Prospect Parkway
Fort Collins, Colorado 80525

Dear Mr. Johnson:

This is in regards to your January 24, 2006, request to the U.S. Fish and Wildlife Service (Service) for information regarding fish and wildlife resources that could occur or be impacted by the proposed interstate crude oil transmission system. Of the 1,830-mile long proposed Keystone pipeline project, 1,070 miles would traverse through six States within the United States: North Dakota, South Dakota, Nebraska, and Kansas, located in Service Region 6; and Missouri and Illinois (the termination point), located in Service Region 3. Our Nebraska field office was also contacted in late February by Scott Ellis from ENSR regarding the proposed Cushing pipeline would start in Oklahoma located in Service Region 2 and would move north through Kansas where it would connect to the Keystone project in southern Nebraska. In total, both the Keystone and Cushing pipelines would be constructed in seven States, throughout three Service regions. The proposed Keystone and Cushing pipeline projects would consist of 30-inch crude oil pipeline that would carry approximately 435,000 barrels of oil a day when in full operation. The pipeline would be buried 4 feet below the surface and contain approximately 23 pump stations along the route. Application for a President's Permit will be made to the State Department. An environmental impact statement is also being proposed. During the past several months, several Service staff attended meetings with representatives of other Federal and State agencies as well as representatives from your organization and TransCanada. During a February 15, 2006, meeting in Nebraska, the Service's Nebraska Field Office (NEFO) met with representatives for the proposed pipeline project to discuss the construction aspect as well as environmental impacts of concern to the Service. During that meeting, ENSR and TransCanada were informed that the NEFO would be the lead field office for the Service for both the Keystone and Cushing pipeline projects.

AUTHORITY

The following comments on the proposed project have been prepared under the authority of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401; 16 U.S.C. 661 *et seq.*) and the

Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), and are to ensure the protection of fish and wildlife resources through your assessments, investigations, and planning of the proposed project. These comments do not preclude the separate review and comments by the Service as afforded by FWCA if any permits are needed from the U.S. Army Corps of Engineers pursuant to the Clean Water Act (33 U.S.C. 1344 *et seq.*). Additionally, these comments do not absolve the project proponent from complying with the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712; 40 Stat. 755, as amended) and Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 688-688d, as amended). Compliance with all of these statutes and regulations are required for compliance with the National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

The Service has special concerns for migratory birds, federally listed endangered and threatened species, and other important fish and wildlife resources. We also are concerned about any impacts on Federal and State wildlife refuges and management areas and other public lands, as well as to other areas that support sensitive habitats. Habitats frequented by important fish and wildlife resources include wetlands, streams, riparian (streamside) woodlands, and native grasslands. We give special attention to proposed projects that propose modification of wetlands, or stream alteration, or could result in contamination of important habitats. The Service recommends ways to avoid, minimize, rectify, reduce, or compensate for damaging impacts to important fish and wildlife resources and their habitats that may be attributed to land and water resource development proposals.

FEDERALLY LISTED SPECIES AND DESIGNATED CRITICAL HABITATS

Pursuant to section 7 of ESA, every Federal agency, in consultation or conference with the Service, is required to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any federally listed or proposed species and/or result in the destruction or adverse modification of designated and/or proposed critical habitat. In accordance with section 7(a)(2) of ESA, the Federal agency should determine if any federally listed threatened or endangered species and/or designated/proposed critical habitat would be directly and/or indirectly affected by the proposed project. The assessment of potential impacts (direct and indirect) must include an "affect" or "no effect" determination and be presented to the Service in writing. If the Service agrees with the determination made by the Federal agency, the Service will provide a letter of concurrence. If federally listed species and/or designated/proposed critical habitat would be adversely affected by this action, the Federal agency will need to formally request further section 7 consultation with the Service prior to making any irretrievable or irreversible commitment of Federal funds (section 7(d) of ESA), or issuing any Federal permits or licenses.

In accordance with section 7(c) of ESA, we have determined that the 14 federally listed species and critical habitats identified in Enclosure 1 are known to occur along the route of the proposed projects and may be affected by its location and/or construction activities. The proposed pipeline projects would be constructed in 59 counties of seven States of which all counties except for two have known occurrences of federally listed species.

Platte River Basin Water Depletions

In addition to the effects of the federally listed species identified in Enclosure 1, water depletions to the Platte River system in Nebraska may affect the federally listed interior least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), bald eagle (*Haliaeetus leucocephalus*), and western prairie fringed orchid (*Platanthera praeclara*). Depletions include evaporative losses and/or consumptive use, often characterized as diversions from the Platte River or its tributaries, less return flows. Project elements that could be associated with depletions to the Platte River system include, but are not limited to, ponds (detention/recreation/irrigation storage/stock watering), lakes (recreation/irrigation storage/municipal storage/power generation), reservoirs (recreation/irrigation storage/municipal storage/power generation), created or enhanced wetlands, hydrostatic testing of pipelines, wells, diversion structures, dust abatement, and water treatment facilities. Any actions that may result in a water depletion to the Platte River system should be identified. The document should include: 1) an estimate of the amount and timing of average annual water use (both historic and new uses) and methods of arriving at such estimates; 2) location of where water use or diversion occurs as specifically as possible; 3) if and when the water would be returned to the system; and 4) for what purpose is the water is being used. Overall, if specific proposed project activities result in the consumptive use of Platte River system water, these activities will need to be identified and the amount and timing of the depletion calculated and provided to the Service.

Affect/No Affect Determination

The Service recommends that the State Department consider the information provided above with regard to making its assessment on the potential impacts of the proposed project on federally listed species and designated critical habitat and in making the "affect/no affect determination." Further, the Service recommends that the State Department not limit its consideration of affect to just the above project information, but other potential affects as they become apparent during the course of other project studies and/or project development and modification.

CANDIDATE SPECIES

Candidate species are species under consideration by the Service for possible inclusion on the *List of Endangered and Threatened Wildlife and Plants*. Although these species receive no substantive or procedural protection under ESA, the Service encourages Federal agencies and project proponents to consider candidate species in their project planning process. Actions taken to avoid effects to these species may reduce the need to consider listing under ESA at a later date. The Dakota skipper (*Hesperia dacotae*) and eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) are candidate species that occur in the area where the proposed Keystone pipeline is planned to be constructed. Additional information regarding these two species is found in Enclosure 1.

BALD AND GOLDEN EAGLES

Bald eagles are currently protected under ESA and listed as threatened. Incidental take of bald eagles under ESA requires a permit. The BGEPA provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) by prohibiting, except under certain specific conditions, the taking, possession, and commercial use of such birds. Based on the information provided in your request, the Service has determined that both the bald eagle and golden eagle and their habitats could occur in the proposed project area and could be affected by the project. Thus, it is the project proponent's responsibility to minimize or avoid impacts. Surveys for nesting bald and golden eagles as well as avoiding both nesting and wintering habitat may be needed to avoid adversely impacting these two species of eagles and comply with the BGEPA.

REVIEW, COMMENTS, AND RECOMMENDATIONS ON THE PROPOSED PROJECT ACTION ON OTHER FISH AND WILDLIFE RESOURCES

A. Streams and Riparian Habitats

The proposed pipeline projects would cross many prairie streams and rivers throughout the Great Plains. The Service recommends that unavoidable impacts to stream pattern, profile, and dimension be mitigated at a ratio of no less that 1:1 (stream length and number, pattern, and length of meanders created/restored versus stream length and number, pattern, and length of meanders impacted; sequence and number of pools and riffles created/restored versus sequence and number of pools and riffles impacted). Additionally, compensation for unavoidable impacts to riparian habitats should occur at a minimum ratio of 3:1 (i.e., acres of riparian habitat replaced for acres of riparian habitat impacted). The 3:1 ratio is based on the loss of the habitat and the amount of time that would be required for planted trees to reach maturity. The Service recommends that TransCanada implement the following conditions as well as the Best Management Practices identified in Enclosure 2 when crossing streams in order to minimize potential environmental impacts:

1. Stream crossings should not be undertaken during fish spawning period. Most spawning occurs in April, May, and June for most States.

2. Stream bottoms impacted by constructions activities should be restored to pre-project elevations.

3. Streams should be crossed perpendicular to flow.

4. Removal of vegetation and soil should be accomplished in a manner to reduce soil erosion and to disturb as little vegetation as possible.

5. Grading operations and reseeding of native species should begin immediately following trench backfilling.

B. Wetland Habitats

The proposed project would be routed through wetland areas that have regional, national, and international importance, especially to migratory birds such as shorebirds, wading and water birds and waterfowl. In general, the Service recommends that avoidance be the first step in any planning project that may adversely impact wetlands. Once all measures have been taken to avoid wetlands and impacts are still likely to occur, the Service recommends that the impacts be minimized to least amount of wetland area impacted. Unavoidable wetland impacts caused by the proposed construction project should be mitigated at a ratio of no less than 2:1 (wetlands created/restored versus wetlands impacted). Should mitigation be applied to a certified wetland mitigation bank, the Service further recommends that unavoidable wetland impacts caused by the proposed project be mitigated at a ratio of no less than 1:1. The Service recommends that TransCanada implement the following conditions as well as the Best Management Practices identified in Enclosure 2 when crossing wetlands in order to minimize potential environmental impacts:

1. Crossing of wetland basins should be done when dry conditions exist.

2. Wetlands impacted by constructions activities should be restored to pre-project elevations. In cases where wetland basins to be crossed are formed because of impermeable soils, the soil area should be packed to reestablish the impermeability of the basin's floor.

3. Removal of vegetation and soil should be accomplished in a manner to reduce soil erosion and to disturb as little vegetation as possible.

4. Grading operations and reseeding of native species should begin immediately following trench backfilling.

Information on the occurrence of wetlands within your project area may be obtained from the relevant National Wetlands Inventory (NWI) map. The U.S. Fish and Wildlife Service has the primary Federal responsibility for mapping and maintaining an inventory of wetlands in the United States. These NWI maps provide information on wetland type, location, and size and can assist you in analyzing the effect of your project. However, these maps may not necessarily provide information on wetlands regulated by the U.S. Army Corps of Engineers under the Rivers and Harbors Act of 1899 and the Clean Water Act of 1977.

The NWI maps can be acquired from the appropriate State distribution center, one of six U.S. Geological Services (USGS) Earth Science Information Center regional offices, or by calling the USGS national toll-free number: 1-800-USA-MAPS. Maps can also be viewed at the Library of Congress and the Federal Depository Library System and, where available, downloaded cost-free through the NWI Home Page on the Internet at <http://www.nwi.fws.gov>.

C. Grassland Habitats

Native prairies are considered the most threatened habitat in the United States, including the seven States through which the proposed pipeline projects are planned to be routed. Therefore, it is of even more importance to protect whatever remains. Impacts to any prairie which is crossed by the proposed project should be minimized by restricting the work space to the absolute minimum necessary to complete the project. This includes vehicle and equipment driving and staging, and storage areas for materials, equipment and supplies. Restoration of any prairie impacts should be mitigated at a ratio of no less than 1:1 (grasslands created/restored versus grasslands impacted) and following methodology and materials approved by the Natural Resources Conservation Service for the specific area of a State that is impacted.

D. Migratory Birds

Under MBTA, construction activities in grassland, wetland, stream, and woodland habitats, and those that occur on bridges (e.g., which may affect swallow nests on bridge girders) that would otherwise result in the taking of migratory birds, eggs, young, and/or active nests should be avoided. Although the provisions of MBTA are applicable year-round, most migratory bird nesting activity in the seven-State area occurs from approximately March through July. However, nesting of migratory birds can occur earlier in southern States and later in northern States. Additionally, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For example, in Nebraska, raptors can be expected to nest in woodland habitats February 1 through July 15, whereas sedge wrens which occur in some wetland habitats normally nest from July 15 to September 10.

If the proposed construction project is planned to occur during the primary nesting season or at any other time which may result in the take of nesting migratory birds, the Service recommends that the project proponent arrange to have a qualified biologist conduct a field survey of the affected habitats and structures to determine the absence or presence of nesting migratory birds. Surveys must be conducted during the nesting season. The Service further recommends that field surveys for nesting birds, along with information regarding the qualifications of the biologist(s) performing the surveys, be thoroughly documented and that such documentation be maintained on file by the project proponent until such time as construction on the proposed project has been completed. In addition, if above ground power lines are proposed for this project they should be built, at a minimum, to standards identified in the *Suggested Practices for Raptor Protection on Power Lines--The State of the Art in 1996* (Edison Electric Institute and the Raptor Research Foundation 1996).

The Service requests that the following be provided to our appropriate State Ecological Services field office prior to construction proceeding at the proposed project site. The purpose of the request is to assist the project proponent to avoid the unnecessary take of migratory birds and the possible need for law enforcement action:

a) A copy of any survey(s) for migratory birds done in conjunction with this proposed project, if any. The survey should provide details in regards to survey methods, date and

time of survey, species observed/heard, and location of species observed relative to the proposed project site.

b) Written description of any avoidance measures implemented at the proposed project site to avoid the take of migratory birds.

c) Written description of any circumstances where it has been determined by the project proponent that one or more active bird nests cannot be avoided by the planned construction activities.

E. National Wildlife Refuges and State Wildlife Management Areas

Based on the route of the proposed projects that the Service has been provided, it appears that proposed pipeline would be going through several areas that the Service administers fee title or an easement within the National Wildlife Refuge System. The Service requires that all wetlands under its jurisdiction be avoided during construction, when possible. Special Use or right-of-way permits would be necessary for any construction activities resulting in impacts to Service lands (i.e., fee title and easements). The issuances of Special Use or right-of-way permits are subject to the final determination of a Refuge compatibility review process under the auspices of the National Wildlife Refuge Improvement Act of 1997. The following States along the proposed pipeline route where Service lands may be encountered are as follows:

North Dakota

The Service's North Dakota Habitat and Population Evaluation Team (HABET) has provided ENSR with digital data representing Service property interests that may be affected by the proposed project. For specific information on Service properties in North Dakota and to determine the need for permits, contact the following offices:

- Cavalier, Grand Forks, Nelson, Pembina, and Walsh Counties: Contact Roger Hollevoet, Project Leader, Devils Lake Wetland Management District, P.O. Box 908, 221 Second Street NW, Devils Lake, North Dakota, 58301, Telephone Number (701) 662-8611.

- Barnes Griggs, and Steele Counties: Contact Ed Meendering, Wetland Manager, Valley City Wetland Management District, 11515 River Road, Valley City, North Dakota, 58072-9619, Telephone Number (701) 845-3466.

- Dickey and LaMoure Counties: Contact Mick Erickson, Project Leader, Kulm Wetland Management District, 1 First Street SW, P.O. Box E, Kulm, North Dakota, 58456, Telephone Number (701) 647-2866.

- Ransom and Sargent Counties: Contact Jeff King, Refuge Manager, Tewaukon National Wildlife Refuge, 9754 143½ Avenue SE, Cayuga, North Dakota, 58013, Telephone Number (701) 724-3598.

South Dakota

This project crosses through several Service Wetland Management Districts in South Dakota.. There are likely to be easements on some of the properties proposed for crossing of the pipeline. There may also be Waterfowl Production Areas crossed by the pipeline. For exact locations of these easements and any additional restrictions that may apply regarding these sites, you will need to contact the following offices:

- Huron Wetland Management District, Federal Building, Room 309, 200 4th Street SW, Huron, South Dakota, 57350, Telephone Number (605) 352-5894.
- Waubay Wetland Management District, Route 1, Box 39, Waubay, South Dakota, 57273, Telephone Number (605) 947-4521.
- Madison Wetland Management District at P.O. Box 48, Madison, South Dakota, 57042, Telephone Number (605) 256-2974.
- Lake Andes Wetland Management District, 38672 291st Street, Lake Andes, South Dakota, 57356, Telephone Number (605) 487-7603.

State Wildlife Management Areas

Further, the proposed pipeline project may cross State Wildlife or Fishing areas that have been acquired by the States with Federal Assistance funds through the Pittman-Robertson Wildlife Restoration Act (PR) or the Dingell-Johnson Sport Fish Restoration Act (DJ). Certain restrictions apply to these lands which may have to be addressed before work can take place. The project proponent should contact the State agencies listed to determine if the project would cross any State areas which have been acquired with PR or DJ funds.

The Service appreciates the opportunity to review and comment on the two proposed pipeline projects. Should you have questions, please contact Mr. John Cochnar within the Nebraska Field Office at john_cochnar@fws.gov or (308)382-6468, extension 20.

Sincerely,

Assistant Regional Director
Ecological Services

REFERENCES

Edison Electric Institute and the Raptor Research Foundation. 1996. Suggested Practices for Raptor Protection on Power Lines - The State of the Art in 1996. Washington, D.C.

ENCLOSURE 1

Federally Listed And Candidate Species Occurrences, Habitats, and Impacts

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*), federally listed as threatened, nests, migrates, and winters in all seven States and within most of the counties along the proposed Keystone and Cushing pipeline routes. Bald eagles utilize mature, forested, riparian areas near rivers, streams, lakes, and wetlands. Bald eagles nest in the seven States generally from early February through mid-August and can vary by State to State. Bald eagles often return to use the same nest and winter roost year after year. Because bald eagles are particularly sensitive to human disturbance at their nests and communal roosts, protective buffers should be implemented around these areas [U.S. Bureau of Land Management (BLM) 2003, Buehler et al. 1991, Greater Yellowstone Bald Eagle Working Group (GYBEWG) 1996, Montana Bald Eagle Working Group (MBEWG) 1994, Stalmaster and Newman 1978, U.S. Fish and Wildlife Service (USFWS) 1986]. Disturbances near an active nest or within line-of-sight of the nest could cause adult eagles to discontinue nest building or to abandon eggs. Generally, bald eagle nest buffer recommendations include restricting activities within 1-mile of bald eagle nests in open country (BLM and USFWS 2002, 2003). In more heavily forested or mountainous areas, where the line-of-sight distance from the nest is shorter, this buffer distance could potentially be reduced (see Stalmaster and Newman 1978, USFWS 1986). During the nesting season bald eagle nest buffers should receive maximum protection during this time period. Also, for some activities (construction, seismic exploration, blasting, and timber harvest), a limited disturbance home range buffer may be required to extend outward into potential foraging habitat for 2.5 miles from the nest (GYBEWG 1996).

The bald eagle southward migration begins as early as October and the wintering period extends from December-March. Bald eagles roost in a forested area known as a communal roost. A communal roost is generally defined as an area where six or more eagles spend the night within 100 meters (328 feet) of each other (GYBEWG 1996). Human disturbances and loss of eagle wintering habitat can cause undue stress leading to cessation of feeding and failure to meet winter thermoregulatory requirements. These effects can reduce the carrying capacity of preferred wintering habitat and reproductive success for the species. For bald eagle communal winter roosts, the Service recommends that disturbance be restricted within 1 mile of known communal winter roosts during the period of November 1 to April 1 (BLM and USFWS 2002, 2003). The Service recommends that habitat altering activities be prohibited within 0.5-mile of active roost sites year round.

Disturbance sensitivity of roosting and nesting bald eagles may vary between individual eagles, topography, and intensity of activities. The buffers and timing stipulations, as described above, are normally implemented unless site-specific information indicates otherwise. Modification of buffer sizes may be permitted where biologically supported and in coordination with the Service.

Decurrent False Aster

The threatened decurrent false aster (*Boltonia decurrens*) is known to occur in Madison County, Illinois, in the floodplain of the Mississippi River. A number of populations of the plant occur in Mississippi/Missouri River floodplain in St. Charles County at the east end of Missouri. The plant occurs in seasonally flooded emergent wetlands. These wetland habitats should be evaluated for their suitability to the plant. It occupies disturbed alluvial soils in the floodplain. Federal regulations prohibit any commercial activity involving this species or the destruction, malicious damage or removal of this species from Federal land or any other lands in the knowing violation of State law or regulation, including State criminal trespass law. A survey for this species may be necessary before earth disturbing activities occur.

Gray Bat

The endangered gray bat (*Myotis grisescens*) inhabits caves throughout the year. This species forages over rivers and reservoirs adjacent to forests. A search for this species should be made prior to any cave impacting activity in Madison County, Illinois.

Gray Wolf

The endangered gray wolf (*Canis lupus*) is an occasional visitor in North Dakota and most often seen in the Turtle Mountain area. The gray wolf that would occur in North Dakota as well as South Dakota are part of the Great Lakes Region Population, as well as the Western Great Lakes Distinct Population Segment (DPS). On March 16, 2006, the Service published in the *Federal Register* a proposal to delist the gray wolf in the Western Great Lakes DPS.

Higgins Eye Pearlymussel and Scaleshell Mussel

Shells of the endangered Higgins eye pearlymussel (*Lampsilis higginsii*) and Scaleshell mussel (*Leptodea leptodon*) have been recently found below the Gavins Point Dam. While populations of these mussels are not known in this reach of the Missouri River, there have been shells found there. With the long-term nature of this project, it is appropriate to alert TransCanada of these shells and allow your environmental documents an opportunity to address these issues. These mussels require good water quality, and can be found in a variety of river habitats, including riffle areas with gravel, cobble, or boulder substrates, mud, or sand.

Indiana Bat

The Indiana bat (*Myotis sodalis*) is a federally endangered species found east of the Missouri River in all counties of Missouri and all counties except for Marion County in Illinois where the pipeline project is proposed to be routed. Potential habitat for this species occurs statewide in Illinois, therefore, Indiana bats are considered to potentially occur in any area with forested habitat, including Marion County. Indiana bats migrate seasonally between winter hibernacula and summer roosting habitats. Winter hibernacula include caves and abandoned mines. These bats hibernate in large, tight clusters which may contain thousands of individuals. Very few

caves exist that provide the conditions necessary for hibernation. Stable, low temperatures are required to allow the bats to reduce their metabolic rate and conserve fat reserves. Indiana bats are subject to natural hazards during hibernation, such as cave flooding, however, humans have been the major cause of declining bat populations. The clusters of hibernating bats are very susceptible to disturbance and vandalism. People touring caves can disturb bats and cause them to awaken. When a bat is aroused, it uses energy at a higher rate, which decreases the energy supply available for the rest of the winter. Females emerge from hibernation in late March or early April to migrate to summer roosts. Females form nursery colonies under the loose bark of trees (dead or alive) and/or cavities, where each female gives birth to a single young in June or early July. A maternity colony may include from one to 100 individuals. A single colony may utilize a number of roost trees during the summer, typically a primary roost tree and several alternates. Some males remain in the area near the winter hibernacula during the summer months, but others disperse throughout the range of the species and roost individually or in small numbers in the same types of trees as females. The species or size of trees does not appear to influence whether Indiana bats utilize a tree for roosting provided the appropriate bark structure is present. However, the use of a particular tree does appear to be influenced by weather conditions, such as temperature and precipitation. These young bats are capable of flight one month after birth. The remainder of the summer and fall is then spent accumulating fat reserves for hibernation. Indiana bats feed entirely on night flying insects, and a colony of bats can consume thousands of insects each night. Bats locate these insects by emitting high-pitched sounds and waiting for the echo, which allows them to zoom in on the bug's location. The fat reserves accumulated by devouring these large quantities of insects during the summer and fall allow the bat to sustain itself during hibernation.

During the summer, Indiana bats frequent the corridors of small streams with well-developed riparian woods, as well as mature upland and bottomland forests. The species forages for insects along stream corridors, within the canopy of floodplain and upland forests, over clearings with early successional vegetation (old fields), along the borders of crop lands, along wooded fence rows, and over farm ponds and in pastures. It has been shown that the foraging range for the bats varies by season, age and sex and ranges up to 81 acres (33 ha). Further, the clearing of forests has caused a decline in the summer habitat of the Indiana bat. Surveys for maternity roosts or bachelor colonies may be necessary if the route of the proposed Keystone pipeline goes through well developed riparian woodlands, bottomland forest or upland forest. A search for this species should be made prior to any cave impacting activities.

In addition to impacts to the Indiana bat at its hibernacula, being an insectivore, the increased use of pesticides has undoubtedly resulted in the poisoning and decline of this species. Coordination with the Service regarding the use of certain types of pesticides to maintain pipeline right-of-way is recommended prior to their application.

Least Tern and Piping Plover

The least tern (*Sterna antillarum*), federally listed as endangered, and the piping plover (*Charadrius melodus*), federally listed as threatened, nest on unvegetated or sparsely vegetated sandbars in river channels and wetlands. Least terns and piping plovers are known to nest on the major river systems in South Dakota, Nebraska, and Kansas including the Platte, Loups,

Niobrara, and Missouri and Arkansas Rivers. Least tern will also nest on bare alluvial or dredge spoil islands and sand/gravel bars in or adjacent to rivers, lakes, gravel pits and cooling ponds. It also utilizes habitats along the Mississippi River in Illinois. Least terns feed on small fish in the river and piping plovers forage for invertebrates on exposed beach substrates. The nesting season for the least tern and piping plover is from April 15 through September 15. It is likely that both species nest at nearby sandpits, and forage on the Platte River. Channel constrictions caused by bridges, causeways, bridge approaches, roadway embankments, bank stabilization, levees, and other unnatural obstructions can result in the loss of broad, shallow, unobstructed channel and sandbar complexes used as feeding and potential nesting habitat by least terns and piping plovers. Ill-timed human activities in the vicinity of such feeding and nesting habitats can disturb least terns and piping plovers. Depletions of instream flows in Nebraska from the Platte River have negative impacts on least terns and piping plovers. Surveys for nesting piping plovers and least terns should be performed prior to any construction, and no construction should take place within 1/4 mile of any known piping plover or least tern nest.

Pallid Sturgeon

The pallid sturgeon (*Scaphirhynchus albus*) was officially listed as an endangered species on September 6, 1990. In South Dakota, the pallid sturgeon is known to occur in the Missouri River. In Nebraska, the pallid sturgeon is found in the Missouri and lower Platte Rivers, while in Kansas and Missouri, it is found in the Missouri River. Pallid sturgeons are found in the Mississippi River downstream of Melvin Price Locks and Dam in Illinois. Floodplains, backwaters, chutes, sloughs, islands, sandbars, and main channel waters formed the large-river ecosystem that provided macrohabitat requirements for the pallid sturgeon, a species that is associated with diverse aquatic habitats. These habitats historically were dynamic and in a constant state of change due to influences from the natural hydrograph, and sediment and runoff inputs from an enormous watershed spanning portions of ten States and Canada. Navigation, channelization and bank stabilization, and hydropower generation projects have caused the widespread loss of this diverse array of dynamic habitats once provided to pallid sturgeon on the Missouri and Mississippi Rivers, resulting in a precipitous decline in populations of the species. Due to the scope of this project, it is likely that the pallid sturgeon would not be adversely impacted along the lower Platte River in Nebraska, except if an activity that would cause a depletion to the Platte River were to occur. However, the pallid sturgeon could be adversely impacted from the crossing of the Missouri and Mississippi Rivers unless directional drilling methods are employed.

Running Buffalo Clover

Running buffalo clover (*Trifolium stoloniferum*) is an endangered plant that occurs on the floodplain of the Cuivre River, Cuivre River State Park, Lincoln County, Missouri. It appears that the alignment between Keystone pipeline miles 965-969 would pass near the Cuivre River. If the alignment occurs on the floodplain of Cuivre River, then surveys may be required regarding possible impacts to the plant. If potential habitat is present within the project area, the Service recommends that a survey be conducted by a botanist familiar with the species to determine the possible occurrence of this plant. Qualifications of the surveyor, method of survey, and results of the survey should be submitted to the Marion Illinois Sub-Office,

8588 Route 148, Marion, Illinois, 62959, for review and a determination whether further section 7 consultation with the Service is necessary.

Topeka Shiner

The Topeka shiner (*Notropis topeka*), federally listed as endangered, is known to occur in South Dakota, Kansas, and Missouri where the two pipelines are proposed to cross. The Topeka shiner inhabits spring-fed, sandy-bottomed streams that have good water quality. The species lives in pools and slack water areas between riffle sequences along a stream course. The species is considered to be carnivorous and feeds on aquatic invertebrates. Stream modifications, sediment deposition, pollution, overgrazing, and predation by introduced fish are thought to have led to the decline of the Topeka shiner across its Midwestern range.

Topeka Shiners can be impacted in one of two ways by a pipeline crossing. First are direct habitat impacts such as channel degradation or water quality impacts from increased sedimentation, which can also include riparian vegetation impacts. At a minimum, the project proponents should maintain and/or restore the riparian corridor with native vegetation, ensuring future filtering of surface runoff to the stream. Second, we recommend against any work that would impact the channel or its banks during the primary spawning season for the shiner; May 15-July 31 inclusive. At an informational meeting in Pierre, South Dakota, on February 8, 2006, TransCanada pipeline representatives indicated that it is possible to bore under important habitats such as Topeka shiner streams. We recommend these Topeka shiner streams be crossed by using the directional boring techniques outlined at the February 8 meeting. Additionally, if the Topeka shiner streams cannot be bored, we recommend that erosion control measures be described and implemented as part of any request for Section 10/404 permit authorizations.

Topeka shiners are known to occupy numerous small streams within eastern South Dakota, and most are concentrated within the Big Sioux, Vermillion, and James River watersheds. Survey efforts continue to reveal additional inhabited streams.

In Missouri, the proposed pipeline alignment would pass through Caldwell and Clinton Counties. The Topeka shiner's historical range occurred in these two counties. It is believed that the fish no longer occurs in this part of its former range.

The pipeline would not cross any areas where critical habitat for Topeka Shiner has been designated.

Western Prairie Fringed Orchid

The western prairie fringed orchid (*Platanthera praeclara*), federally listed as threatened, inhabits tall-grass calcareous silt loam or sub-irrigated sand prairies. Declines in western prairie fringed orchid populations have been caused by the drainage and conversion of its habitats to agricultural production, channelization, siltation, road and bridge construction, grazing, haying, and the application of herbicides. Along the proposed pipeline route, in Nebraska, populations are known to occur in Seward and Stanton Counties, and may occur at other sites in Nebraska. The western prairie fringed orchid has not recently been documented in South Dakota. However,

the life cycle of the plant can make it difficult to detect, plus populations currently exist in the neighboring States of Nebraska, Minnesota, and North Dakota, and potential habitat may still be found in South Dakota; therefore potential exists for the orchid to be found in this State. In North Dakota, the orchid is found in Ransom County and on the Sheyenne National Grasslands, where the largest population in the United States is known to occur. If potential habitat is present within the project area, the Service recommends that a survey be conducted by a botanist familiar with the species during the flowering period (i.e., mid-June to mid-July) to determine the possible occurrence of this plant. Qualifications of the surveyor, method of survey, and results of the survey should be submitted to the appropriate Service State field office for review and a determination whether further section 7 consultation with the Service is necessary.

Whooping Crane

Whooping cranes *(Grus americanus)*, federally listed as endangered, use numerous habitats such as cropland and pastures; wet meadows; shallow marshes; shallow portions of rivers, lakes, reservoirs, and stock ponds; and both freshwater and alkaline basins for feeding and loafing during their spring and fall migration. Overnight roosting sites frequently require shallow water in which they stand and rest. Shallow, sparsely vegetated streams and wetlands are required to feed and roost during migration. The north-south migrational corridor through Oklahoma, Kansas, Nebraska, South Dakota, and North Dakota is crossed by the two proposed pipelines. Migrating whooping cranes could be roosting or feeding in areas where the two pipelines are proposed to be constructed. The migration periods in general are from approximately March 23 through May 10 and from September 16 through November 16. Migration periods throughout the States involved may vary due to the northern or southern location during the migrational period. Alterations to feeding and roosting habitats, human disturbance, and depletions of instream flows to the Platte River in Colorado, Wyoming, and Nebraska have negative impacts on the whooping crane. Disturbance (flushing the birds) stresses them at critical times of the year. We recommend that you remain vigilant for these birds. There is little that can be done to reduce disturbance besides ceasing activity at sites where the birds have been observed. The birds normally do not stay in any one area for long during migration. If construction of the proposed pipeline occurs during either the spring or autumn migration and whooping cranes use areas within 1-mile of where pipeline construction is occurring, construction activities must cease immediately and the Service's respective State field office, including the Nebraska Field Office, (which maintains the Cooperative Whooping Crane Tracking Project for the United States) must be notified to determine when construction can continue. Additionally, young adult whooping cranes are known to summer in North Dakota.

CANDIDATE SPECIES

Dakota Skipper

The Dakota skipper (*Hesperia dacotae*), is a candidate species found in both North and South Dakota native prairies containing a high diversity of wildflowers and grasses. Habitats include two prairie types: 1) low (wet) prairie dominated by bluestem grasses, wood lily, harebell, and smooth camas; and 2) upland (dry) prairie on ridges and hillsides dominated by bluestem grasses, needlegrass, pale purple and upright coneflowers, and blanketflower. In North Dakota,

the Dakota skipper occurs in Ransom and Sargent Counties. In South Dakota, the Dakota skipper occurs in Brookings, Brown, Codington, Day, Deuel, Edmunds, Grant, Hamlin, Marshall, McPherson, and Roberts Counties. Impacts to this species and its associate habitats should be avoided.

Eastern Massasauga

The eastern massasauga rattlesnake (*Sistrurus catenatus catenatus)*, is a Federal candidate species and is known to occur in Bond and Fayette Counties, Illinois, in the vicinity of Carlyle Lake where it hibernates near the lake shoreline. In Missouri, the massasauga is known to occur in Chariton County. Massasaugas live in wet areas, including wet prairies, marshes and low areas along rivers and lakes. In many areas massasaugas also use adjacent uplands, including forest, during part of the year. They often hibernate in crayfish burrows but they may also be found under logs and tree roots or in small mammal burrows. Unlike other rattlesnakes, massasaugas hibernate alone. Impacts to this species and its associate habitats should be avoided.

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U.S. Bureau of Land Management. 2003. Final Statewide Programmatic Bald Eagle Biological Assessment. Prepared for the Wyoming Bureau of Land Management by Greystone Consultants. August 2003. 266 pp. + Appendices.

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ENCLOSURE 2

Recommended Best Management Practices for Proposed Pipeline Construction Activities

- Implement a sediment and erosion control plan using best management practices during construction such as a) the installation of sediment fencing and straw hay bales to capture sediment, and b) stock piling any excavated material well away from streams and wetlands so that the material cannot slough back into these areas.

- Monitor sediment/erosion control measures after precipitation events. Clean, repair, and replace structures as necessary.

- Monitor sediment/erosion control measures periodically throughout all phases of construction. Clean, repair, and replace structures as necessary.

- Establish staging areas for the crew, equipment, hazardous materials, chemicals, fuels, lubricating oils, etc., no closer than 300 feet of a stream bank or wetland.

- Install sediment and erosion controls around staging areas to prevent discharge from these sites.

- Store construction waste materials, debris, and excess materials well away from streams and wetlands.

- Refuel construction equipment at least 100 feet from stream banks and wetlands.

- Use the horizontal directional drilling method for proposed pipeline crossings of streams and wetlands, especially those streams which contain flowing water during project implementation to avoid impacts to these resources.

- If the directional drilling method would not be feasible, we recommend the following:
  - conduct stream crossings during a period of low stream flow (July to October)
  - limit tree trimming and cutting to only what it is necessary
  - limit access of construction equipment within the stream channel to one confined location, preferably over an existing bridge, equipment pads, clean temporary native rock fill, or over a temporary portable bridge
  - limit in-stream equipment to that needed to construct a crossing
  - do not alter or remove natural stream features such as riffles or pools
  - place trench spoil at least 10 feet away from stream banks
  - use sediment filter devices to prevent flow of spoil off the right-of-way
  - dewater the trench, as necessary, to prevent discharge of silt laden water into streams and wetlands during construction and backfilling operations
  - return the substrate and contours of the wetland and stream bank and bottom of the channel to preproject conditions.

- Maintain natural stream features such as riffles or pools.
- Keep all machinery out of streams as much as possible.
- Limit the removal of riparian vegetation to only when it is necessary.
- Replace any woody riparian vegetation unavoidably lost by planting five trees for every tree lost. Only native riparian plants should be used to help prevent the spread of exotics.
- Leave a wide natural vegetated buffer area around any wetland (minimum 100 feet) and along any streams (minimum 100 feet) located on the project site.
- Revegetate all disturbed areas as soon as possible after construction using only native plants to reduce soil erosion. Annual species, such as rye or wheat, may initially be planted along with native species in areas subject to immediate soil loss, such as a steep slope, to provide rapid erosion control. Final revegetation should use native species only.
- Limit the use of fertilizers, herbicides, pesticides, or other chemicals to reestablish native vegetation and maintenance of pipeline right-of-ways. Application of chemicals should be no closer than 100 feet of streams and wetlands.
- Remove and dispose of all debris and excess construction materials properly upon project completion.
- Evaluate the establishment of vegetation after project completion and inspect all sediment control structures at 1 month intervals for at least 3 months. Retain sediment control structures until site stabilization is achieved; and
- Remove temporary sediment/erosion control structures upon final site stabilization.

CONFIDENTIAL

DRAFT

Mr. Charles Johnson
ENSR
1601 Prospect Parkway
Fort Collins, CO 80525

RE: Proposed Keystone and Cushing Projects by TransCanada

Dear Mr. Johnson:

This is in regards to your January 24, 2006, request to the U.S. Fish and Wildlife Service (Service) for information regarding fish and wildlife resources that could occur or be impacted by the proposed interstate crude oil transmission system. The of the 1,830-mile long project, 1,070 miles of the proposed Keystone pipeline project traverses through six States within the United States. The Keystone pipeline would cross the States of North Dakota, South Dakota, Nebraska, and Kansas, located in Service's Region 6, and proceeds through Missouri and terminate in Illinois, which are located in Service Region 3. The proposed Cushing pipeline starts in Oklahoma located in the Service's Region 2 and moves north through Kansas where it connects to the Keystone project in southern Nebraska. In total, both the Keystone and Cushing pipelines would be constructed in seven States, throughout three Service regions. The proposed Keystone and Cushing pipeline projects will be a 30-inch crude oil pipeline that would carry approximately 435,000 barrels of oil a day when in full operation. The pipeline would be buried 4 feet below the surface and contain approximately 23 pump stations along the route. Application for a President's Permit will be made to the State Department. An environmental impact statement is also being proposed. During the past several months, several Service staff attended meetings with representatives of other federal and State agencies as well as representatives from your organization and TransCanada. During a February 15, 2006, meeting in Nebraska, the Service's Nebraska Field Office (NEFO) met with representatives for the proposed pipeline project to discuss the construction aspect as well as environmental impacts of concern to the Service. During that meeting, ENSR and TransCanada were informed that the NEFO would be the lead field office for the Service for both the Keystone and Cushing pipeline projects.

AUTHORITY

The following comments on the proposed project have been prepared under the authority of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401; 16 U.S.C. 661 *et seq.*) and the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), and are to ensure the protection of fish and wildlife resources through your assessments, investigations, and planning of the proposed project. These comments do not preclude the separate review and comments by the Service as afforded by FWCA if any permits are needed from the U.S. Army Corps of Engineers pursuant to the Clean Water Act (33 U.S.C. 1344 *et seq.*). Additionally, these comments do not absolve the project proponent from complying with the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712; 40 Stat. 755, as amended) and Bald

and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 688-688d, as amended). Compliance with all of these statutes and regulations are required for compliance with the National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

The Service has special concerns for migratory birds, federally listed endangered and threatened species, and other important fish and wildlife resources. We also are concerned about any impacts on federal and State wildlife refuges and management areas and other public lands, as well as to other areas that support sensitive habitats. Habitats frequented by important fish and wildlife resources include wetlands, streams, riparian (streamside) woodlands, and native grasslands. We give special attention to proposed projects that propose modification of wetlands, or stream alteration, or could result in contamination of important habitats. The Service recommends ways to avoid, minimize, rectify, reduce, or compensate for damaging impacts to important fish and wildlife resources and their habitats that may be attributed to land and water resource development proposals.

FEDERALLY LISTED SPECIES AND DESIGNATED CRITICAL HABITATS

Pursuant to section 7 of ESA, every federal agency, in consultation or conference with the Service, is required to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any federally listed or proposed species and/or result in the destruction or adverse modification of designated and/or proposed critical habitat. In accordance with section 7(a)(2) of ESA, the federal agency should determine if any federally listed threatened or endangered species and/or designated/proposed critical habitat would be directly and/or indirectly affected by the proposed project. The assessment of potential impacts (direct and indirect) must include an "affect" or "no effect" determination and be presented to the Service in writing. If the Service agrees with the determination made by the federal agency, this office would provide a letter of concurrence. If federally listed species and/or designated/proposed critical habitat would be adversely affected by this action, the federal agency will need to formally request further section 7 consultation with the Service prior to making any irretrievable or irreversible commitment of federal funds (section 7(d) of ESA), or issuing any federal permits or licenses.

In accordance with section 7(c) of ESA, we have determined that the 14 federally listed species and critical habitats identified in Enclosure 1 are known to occur along the route of the proposed projects and may be affected by its location and/or construction activities. The proposed pipeline projects will be constructed in 59 counties of seven States of which all counties except for two have known occurrences of federally listed species.

Platte River Basin Water Depletions

In addition to the effects of the federally listed species identified in Enclosure 1, water depletions to the Platte River system in Nebraska may affect the federally listed interior least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), bald eagle (*Haliaeetus leucocephalus*), and western prairie fringed orchid (*Platanthera praeclara*). Depletions include evaporative losses and/or consumptive use, often characterized as diversions from the Platte River or its tributaries less return flows. Project elements that could be