

**APPENDIX H FISH, WILDLIFE AND VEGETATION
RESOURCES INVENTORY**

1.0 INTRODUCTION

Associated Electric Cooperative, Inc. (AECI) has retained the services of Burns & McDonnell Engineering Co., Inc. (Burns & McDonnell) to complete the field work and provide a threatened and endangered species habitat assessment for a new 660-megawatt (MW) coal-fired electric generating plant. AECI is proposing to construct the plant at a site in Carroll County, approximately 2.5 miles west of Norborne, Missouri. The project also includes development of a lateral collector well, water supply pipeline, and a new railroad spur to deliver coal to the site. Figure 1 shows the location of the Plant Site, collector well site, and possible railroad spur corridors. Additionally, two transmission line corridors have been proposed; from the Norborne site northeast to the Thomas Hill substation and the from the Norborne Plant Site southeast to the Mt. Hulda Substation site. Figures 2 and 3 show the Norborne to Thomas Hill route and the Norborne to Mt. Hulda route, respectively.

A habitat assessment was conducted on August 2, 2006 to determine if appropriate habitat for threatened and endangered plant and animal species exists at the Norborne Plant Site. The general characteristics of the Norborne Plant Site, the vegetative community, and the wildlife present were noted during the habitat assessment; photographs of representative areas were taken and are provided with this assessment. In addition to the Plant Site assessment, possible corridors for the railroad spurs connecting to the Norborne Site, the water supply line and the collector well area were also assessed.

A desktop survey of possible transmission line routes was conducted to determine if there would be any potential impacts to threatened and endangered species. The routes were analyzed using Gap Analysis Program (GAP) data to determine how many acres of the various types of habitat were crossed by the transmission line routes. Additionally, aerial photographs were analyzed to identify any other potential impacts, especially in regard to stream/creek crossings.

2.0 WILDLIFE

Wildlife observed during the site visits include American robins (*Turdus migratorius*), mourning doves (*Zenaida macroura*), and squirrels (*Sciurus* sp.) The majority of these species were observed along the section roads and wooded fence rows throughout the project site. A small flock of mallard ducks (*Anas platyrhynchos*) was observed in the marsh north of County Road 638. Other common mammal species, such as white-tailed deer (*Odocoileus virginianus*), cottontail rabbits (*Sylvilagus floridanus*), opossum (*Didelphis virginiana*), raccoons (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and coyote (*Canis latrans*) also likely inhabit the areas surrounding the proposed new plant. Construction and operation of the plant and associated facilities are not expected to result in any negative impacts to wildlife or wildlife habitat that occurs on or in the vicinity of the proposed project. The Norborne Plant Site, lateral collector well, water supply pipeline, railroad spur corridors and the transmission line corridors are primarily located in crop fields and will result in minor impacts to wildlife habitats within the project area.

3.0 VEGETATION

Narrow wooded riparian corridors are present along the banks of the West Fork of Wakenda Creek and Wakenda Creek. The proposed route for the new water supply pipeline will impact vegetation within the wooded fence rows separating the crop fields south of the Norborne Plant

Site. A railroad spur constructed within the proposed north or northwest railroad spur corridor will likely impact some of the wooded riparian vegetation that occurs along the West Fork of Wakenda Creek or Wakenda Creek; however, impacts to the riparian vegetation would likely only occur at creek crossings. No riparian vegetation will be impacted by constructing the railroad spur in the corridor south of the proposed Norborne Plant Site.

For the vegetative analysis of the potential transmission line corridors, online data from several governmental agencies was used in conjunction with aerial photography to assess the routes. The environmental routing criteria used in this analysis include the following generalized habitats: grassland/open land, woodland, perennial waterway, and cropland.

Cropland was quantified within each quarter-mile route-corridor from GAP data acquired from the Missouri Spatial Data Information Service on the Internet. Land use data were not field-verified, but were visually compared with available 2003 aerial photography for confirmation. The GAP field category used for this analysis was labeled “row and close-grown crops”. Cropland was separated from other agricultural land for this analysis because impacts from transmission poles tend to be greater for cultivated land than if the field were used for pasture and other passive agricultural operation.

Grassland/Open Land was measured using the GAP land cover data, and consists of the categorized “barren or sparsely vegetated”, “cool-season grassland”, and “warm-season grassland”. Acres were calculated within each quarter-mile route-corridor.

Woodland consists of the forested areas within the right-of-way that would be cleared along each route, based on the GAP data assessment. The GAP data categories used to identify woodland for this project included “glade complex”, “eastern red cedar and red cedar-deciduous forest and woodland”, “deciduous woodland”, “deciduous forest”, “shortleaf pine-oak forest and woodland”, “shortleaf pine”, and “bottomland hardwood forest and woodland”.

The **Other** designation consists of water bodies, roads, etc. that do not fall into any of the other categories.

Perennial Waterway crossings were determined using the centerline of the proposed route-corridors and by calculating the number of perennial streams or rivers crossed. The information is based on the use of ESRI (Environmental Systems Research Institute) ArcGIS StreetMap hydrologic data categorized as perennial streams and rivers.

The following table shows the different types of potential habitat and the acreage based on GAP data assessments:

Potential Routes	Total Length	Total Acres	Cropland	Grassland/ Open land	Woodland	Other	Perennial Waters Crossed
Norborne to Thomas Hill							
NT1	69.8	11,183.8	5,491.0	4,277.3	1,327.3	88.2	15
NT2	70.6	11,296.5	5,516.8	4,468.8	1,205.6	105.3	19
NT3	61.9	9,910.3	5,010.3	4,123.9	694.1	82.0	18

NT4	67.2	10,754.9	5,761.3	4,075.5	802.7	115.4	14
Norborne to Mt. Hulda							
<i>Norborne to Sedalia</i>							
NS1	60.5	9,689.8	5,123.0	3,378.5	1,084.3	104.0	14
NS2	60.8	9,734.7	5,093.2	3,508.2	1,031.1	102.2	14
NS3	56.7	9,071.0	6,180.8	2,070.0	725.7	94.5	10
NS4	57.0	9,115.9	6,151.0	2,199.7	672.5	92.7	10
NS5	69.0	11,016.5	6,988.7	2,973.5	964.9	89.4	20
NS6	52.0	8,316.7	5,675.7	1,878.0	675.3	87.7	7
NS7	52.3	8,361.6	5,645.9	2,007.7	622.1	85.9	7
NS8	64.2	10,262.2	6,483.6	2,781.5	914.5	82.6	17
NS9	61.6	9,846.0	6,234.0	2,647.2	911.1	53.7	18
<i>Sedalia to Mt. Hulda</i>							
SMT1	27.5	4,403.7	1,229.3	2,005.4	1,169.0	0.0	12
SMT2	29.7	4,772.3	1,125.5	2,200.7	1,445.7	0.4	8
SMT3	25.2	4,048.3	782.2	2,049.7	1,213.1	3.3	7
<i>Dresden Alternatives</i>							
DA1	1.6	257.8	223.0	34.8	0.0	0.0	0
DA2	2.3	355.2	235.8	91.6	27.7	0.1	0

4.0 PROTECTED SPECIES

Information on potential threatened and endangered species was gathered from the Missouri Department of Conservation (MDC) Natural Heritage database (<http://www.mdc.mo.gov/cgi-bin/heritage/search.cgi?county=Carroll>). A list of federally protected species found within Carroll County was obtained from the U.S. Fish and Wildlife Service (FWS) Region 3 website (<http://www.fws.gov/midwest/Endangered/lists/missouri-cty.html>). According to the FWS and MDC lists, seven state or federally threatened or endangered species are known or likely to occur within Carroll County and could be found within the site boundary (see table below).

Protected Species Known or Likely to Occur in Carroll County, Missouri			
Common Name	Scientific Name	Federal Status	State Status
Lake Sturgeon	<i>Acipenser fulvescens</i>	None	Endangered
American Bittern	<i>Botaurus lentiginosus</i>	None	Endangered
Northern Harrier	<i>Circus cyaneus</i>	None	Endangered
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Endangered
Indiana Bat	<i>Myotis sodalis</i>	Endangered	Endangered
Flathead Chub	<i>Platygobio gracilis</i>	None	Endangered
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered	Endangered

Sources: FWS and MDC Heritage Databases

The potential transmission line corridors connecting the Norborne site to the Thomas Hill substation runs through Carroll, Chariton, and Randolph Counties. There are nine state or federally listed threatened and endangered species found in these counties:

Protected Species Known or Likely to Occur in Carroll, Chariton, and Randolph Counties, Missouri			
Common Name	Scientific Name	Federal Status	State Status
Lake Sturgeon	<i>Acipenser fulvescens</i>	None	Endangered
American Bittern	<i>Botaurus lentiginosus</i>	None	Endangered
Northern Harrier	<i>Circus cyaneus</i>	None	Endangered

Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Endangered
Indiana Bat	<i>Myotis sodalis</i>	Endangered	Endangered
Flathead Chub	<i>Platygobio gracilis</i>	None	Endangered
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered	Endangered
Eastern Massasauga	<i>Sistrurus catenatus catenatus</i>	Candidate	Endangered
Interior Least Tern	<i>Sterna antillarum athalassos</i>	Endangered	Endangered

Sources: FWS and MDC Heritage Databases

The potential transmission line corridors connecting the Norborne site to the Dresden or Sedalia substation, then on to the Mt. Hulda substations crosses through Carroll, Lafayette, Saline, Pettis, Johnson, and Benton Counties. There are eighteen state or federally listed threatened and endangered species found in those counties are located in the table below:

Protected Species Known or Likely to Occur in Carroll, Lafayette, Saline, Pettis, Johnson, and Benton Counties, Missouri			
Common Name	Scientific Name	Federal Status	State Status
Lake Sturgeon	<i>Acipenser fulvescens</i>	None	Endangered
American Bittern	<i>Botaurus lentiginosus</i>	None	Endangered
Northern Harrier	<i>Circus cyaneus</i>	None	Endangered
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Endangered
Indiana Bat	<i>Myotis sodalis</i>	Endangered	Endangered
Flathead Chub	<i>Platygobio gracilis</i>	None	Endangered
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered	Endangered
King Rail	<i>Rallus elegans</i>	None	Endangered
Mead's Milkweed	<i>Asclepias meadii</i>	Threatened	Endangered
Barn Owl	<i>Tyto alba</i>	None	Endangered
Black-tailed Jackrabbit	<i>Lepus californicus</i>	None	Endangered
Topeka Shiner	<i>Notropis topeka</i>	Endangered	Endangered
Greater Prairie-chicken	<i>Tympanuchus cupido</i>	None	Endangered
Niangua Darter	<i>Etheostoma nianguae</i>	Threatened	Endangered
Gray Bat	<i>Myotis grisescens</i>	Endangered	Endangered
Eastern Massasauga	<i>Sistrurus catenatus catenatus</i>	Candidate	Endangered
Cave Crayfish	<i>Cambarus aculabrum</i>	Endangered	None
Running Buffalo Clover	<i>Trifolium stolonifereum</i>	Endangered	None

Sources: FWS and MDC Heritage Databases

For species that are protected at the state level, the Missouri Department of Conservation has developed a set of Best Management Practices (BMP's). These BMP's make specific recommendations for each individual species, such as avoiding tree clearing during breeding times or to avoid destroying open area used for hunting or foraging for food. These guidelines are provided for all available species in Appendix A. A table compiling some construction time restrictions is also provided in the appendix.

Indiana bats (*Myotis sodalis*) and Gray bats (*Myotis grisescens*) forage in riparian forest and over open water. Summer habitat includes mature riparian forests and adjacent upland forests. Snags and cavity trees with a diameter at breast height (dbh) of greater than 9 inches and full forest

canopy with open understory is preferred. During the winter, Indiana bats hibernate in limestone caves, while the Gray bat utilizes caves year-round.

Field surveys determined that no limestone caves are present at the proposed Norborne Plant Site, lateral collector well site, or along the water supply pipeline corridor and southern railroad spur corridor. Based on available information, no cave habitats are known to occur or are expected to occur along the proposed north and northwestern railroad spur corridors that follow the West Fork of Wakenda Creek and Wakenda Creek or the transmission line corridors. The proposed project is not expected to impact potential cave habitats of the Indiana bat or the Gray bat. Similarly, the proposed project is not expected to impact potential cave habitats of the cave crayfish (*Cambarus aculabrum*). The cave crayfish, which lives exclusively in caves, is known or likely to occur in the counties south of the proposed Plant Site that are crossed by the southern transmission line route alternatives.

The lake sturgeon (*Acipenser fulvescens*), pallid sturgeon (*Scaphirhynchus albus*), and flathead chub (*Platygobio gracilis*) occur in large rivers, such as the Missouri River, with consolidated bottoms of sand and gravel. The flathead chub is also found in smaller, gravel-bottomed creeks. These slower creeks are the preferred habitat for the Topeka shiner (*Notropis topeka*) and the Niangua darter (*Etheostoma nianguae*).

There are two protected birds of prey potentially occurring within the Norborne site or associated structures locations: Bald eagles and Northern harriers. Bald eagles (*Haliaeetus leucocephalus*) typically roost and nest in large trees along large rivers and flood plains. The fish and waterfowl that are common along large streams also provide ample hunting opportunities. It is possible that bald eagles may be seasonally present along the Missouri River or some of the larger creeks and streams. The Northern harrier (*Circus cyaneus*) is generally a migratory bird that can be found in Missouri between February and November. The harriers inhabit open fields, prairies, native grass plantings, and shallow marshes, with their primary habitat being grassland. They are carnivorous with a vast majority of their prey being made up of mammals and other birds. Open fields with good ground cover is the optimal habitat for the harriers to hunt in. Northern harriers are known to nest in meadows and open areas within the western half of Missouri but likely nest throughout the state (Missouri Breeding Bird Atlas, <http://www.mdc.mo.gov/nathis/birds/birdatlas/index.htm>).

The barn owl (*Tyto alba*) also is an open field predator that hunts for small mammals and other birds in open grassland and crop fields. Trees with dbh of greater than 20 inches are used for nesting, as well as grain elevators and barns. Breeding occurs in March and April throughout Missouri with hatching beginning in May (Missouri Breeding Bird Atlas, <http://www.mdc.mo.gov/nathis/birds/birdatlas/index.htm>).

Greater prairie-chickens (*Tympanuchus cupido*) have historically occupied grasslands bordered by oak woodlands, savannas and wetlands in Missouri, but now are restricted to pastures and small remnant prairies mainly in the Osage Plains located in west-central Missouri. They generally forage for broad-leaved grasses, grass-like plants, cultivated grains and insects. Greater prairie-chickens may occur in the vicinity of the proposed project; however, no impacts are anticipated because the proposed project impacts primarily crop fields.

The black-tailed jackrabbit (*Lepus californicus*) also inhabits the native grasslands with adjacent crop fields, preferably legumes. These jackrabbits breed year-round, but mostly during the late-winter to mid-summer months. Black-tailed jackrabbits are rare in Missouri because extensive cultivation of the west-central region of the state has caused a decrease in habitat and jackrabbit populations.

The American bittern is a potential inhabitant of Carroll County, however, they are undocumented in Carroll County at this time. They are known to occur in Lafayette and Saline Counties. The species occurs in marshes and shallow wetlands and are generally rare summer residents, uncommon transients, or accidental winter residents in Missouri. The primary habitat of the northern harrier is grasslands, prairies, native grass plantings and marshes. The king rail (*Rallus elegans*) is a marsh bird usually inhabiting wetlands dominated by sedges, preferably those associated with riverine floodplain systems. They are migratory birds, spending their breeding and rearing season from March to June in Missouri. There are known occurrences of king rails in Saline County, however, the birds are not commonly found in Missouri, usually in state conservation areas and national wildlife refuges.

The interior least terns (*Sterna antillarum athalassos*) historically nested on sandbar islands in major rivers but are now restricted to several islands on the lower Mississippi River. Migratory least terns occur in Missouri from May through August. When nesting, the terns prefer areas where vegetation is sparse or absent.

The eastern massasaugas (*Sistrurus catenatus catenatus*) are rattlesnakes that are native to natural marsh and moist prairie habitats in Northern Missouri. Their numbers have been greatly reduced to only three small populations in the state. The largest of these populations is located in Swan Lake National Wildlife Refuge, located in the northwest corner of Chariton County. The massasauga's activity level is dependant upon the weather, and they hibernate during the winter.

Mead's milkweed (*Asclepias meadii*) was also widespread across the Midwest but is now restricted to small areas in the Osage Plains of west-central Missouri, and a small mountainous area in the Ozarks. The primary habitats of this species of milkweed are the grasslands and native prairies.

Running buffalo clover (*Trifolium stolonifereum*) is a perennial plant flowering from mid-April to June and is easily propagated from cuttings. The clover needs partial shade and periodic disturbances such as mowing or grazing. Often times, it may occur in partial shade in mowed lawn areas, especially along major streams and rivers. Historically found in several counties in Missouri, it has been extirpated from much of its range. Several attempts at establishing new populations of running buffalo clover have been attempted, including introduction into Benton County in the following watersheds: Meramec River, St. Francis River from headwaters to Wappapello Dam, and Gasconade River from Big Piney River to Missouri River.

4.1 NORBORNE SITE

The Norborne Plant Site is located in Section 17 (T 52 N, R 25 W). Land use at and in the vicinity of the Norborne Plant Site is primarily agricultural in nature; and consists mostly of soybean and corn crop fields separated by wooded fence rows. A wheat field, wetland marsh,

woodland, and grass pasture are located in the northern portion of the site, north of County Road 638. The proposed footprint of the Norborne plant is located south of County Road 638 and will avoid impacting the marsh, forested area, and grass pasture. The Norborne Plant Site footprint will impact vegetation along the wooded fence rows that separate the crop fields. No other vegetative communities are anticipated to be impacted by construction of the Norborne Plant.

No potential protected species habitat was identified within the Norborne Plant Site footprint during a site survey that occurred in August 2006. Construction and operation of the Norborne plant should not result in any permanent impacts to threatened and endangered species or critical habitats. No impacts to protected species are anticipated because the Norborne plant is located within previously disturbed crop fields and wooded fence rows.

4.2 COLLECTOR WELL AND PIPELINE

The proposed water supply pipeline is approximately 5.75 miles and will be constructed between the south side of the Norborne Plant Site and a lateral collector well being constructed along the north bank of the Missouri River (Figure 1). The proposed water pipeline follows existing county roads and will impact vegetation within crop fields and wooded fence rows separating the crop fields. No protected species or critical habitats were observed along the proposed water supply pipeline; thus, impacts to any protected species are not expected.

The lateral collector well will be constructed adjacent to the bank of the Missouri River and will supply cooling water to the proposed Norborne plant. The lateral collector well consists of a vertical concrete caisson riser pipe that extends down to bedrock and houses multiple pumps. The footprint of the caisson for the lateral collector well riser pipe will be located above the ordinary high water mark for the Missouri River. From near the bottom of the caisson, lateral well screens radiate out into the alluvium under the Missouri River bed. The length of each lateral well screen will be approximately 200 feet measured from the inside of the caisson. Although the lateral well screens will be constructed in the alluvium beneath the Missouri River, the bed of the Missouri River and bank below the ordinary high water mark will not be impacted by the construction of the lateral collector well; thus, impacts to aquatic species within the Missouri River will be avoided.

A forested riparian corridor intermittently occurs along the Missouri River in the vicinity of the lateral collector well site. The lateral collector well will be constructed within crop fields adjacent to the Missouri River where there is a break in the forested riparian corridor. Construction of the lateral collector well at the proposed location will avoid impacting the forested riparian corridor along the Missouri River, which is considered potential roosting and nesting habitat for the bald eagle.

To minimize potential impacts to bald eagles and potential roosting and nesting habitats that may be located near the potential lateral collector well site, best management practices will be followed. In accordance with the Missouri Department of Conservation's Best Management Practices for the Bald Eagle, construction of the lateral collector well and water supply pipeline will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area.

4.3 OUTFALL STRUCTURE

If an outfall structure is necessary, the outfall structure will be located along on of the agricultural ditches that occur at the proposed Norborne Plant Site. No outfall structure will be placed along the Missouri River. Process wastewater from the proposed Norborne Plant will be treated before it will be discharged; thus, no impacts to water quality or aquatic species are anticipated to result from the discharged process water.

4.3 RAILROAD SPUR CORRIDORS

There are three potential railroad spur corridors that would connect the Norborne site to existing railroads. The routes of the proposed railroad spur corridors are illustrated in Figure 1. Two of the potential railroad spur corridors are located northeast and northwest of the Norborne Site. The northwestern rail spur corridor follows the West Fork of Wakenda Creek and the northern corridor follows Wakenda Creek proper to connect with a BNSF rail line located north of the Norborne Plant Site. A third potential railroad spur corridor is located south of the plant site. The third potential railroad spur corridor crosses crop fields to connect with a BNSF rail line located south of the Norborne Plant Site.

4.3.1 SOUTH ROUTE

The south railway corridor is approximately 2 miles long and extends out from the southern footprint of the Norborne site and then turns west to connect with the existing BNSF railroad south of the Norborne Plant Site. The entire corridor is located within previously disturbed crop fields and wooded fence rows. No potential habitat for protected species was observed along the proposed route during a site visit; thus, no impacts are expected.

4.3.2 NORTHEAST ROUTE

The northeast railway corridor would connect the existing Burlington railroad north of the Norborne site to the northeastern corner of the Norborne site. The route extends approximately 1.5 miles northeast from the corner of the Norborne Plant Site, then approximately 4.75 miles northwest where it connects with the existing BNSF rail line. Much of the longer segment follows Wakenda Creek proper. A narrow wooded riparian corridor is present along the banks of the Wakenda Creek. Construction of the northeastern railroad spur will likely impact some of the wooded riparian vegetation that occurs along Wakenda Creek; however, impacts to the riparian vegetation would likely only occur at creek crossings.

Construction of a railroad spur along Wakenda Creek will likely result in a relatively small impact to riparian habitat in the area. The impacts would be limited to the removal of riparian vegetation during construction and maintenance activities. Wakenda Creek is an intermittent stream and had no flow at the time of the August 2nd site visit. Because of the intermittent flows, intermittent streams typically do not usually support aquatic communities; therefore, no impacts to aquatic communities are anticipated. Best management practices, including storm water and erosion control measures, will be implemented during construction of any creek crossing to avoid potential impacts to Wakenda Creek. Where required by the U.S. Fish and Wildlife Service or the Missouri Department of Conservation, the clearing of mature trees along Wakenda Creek and in specific areas considered to be potential habitat along the proposed route for the railway corridors will occur between October 1 and March 31 to avoid impacting any Indiana bat

potential roosting sites in the project area, as recommended by the Missouri Department of Conservation.

4.3.3 NORTHWEST ROUTE

The northwest railway corridor would connect the existing Burlington railroad north of the Norborne site to the northwestern corner of the Norborne site. The route extends approximately 1.5 miles north from the corner of the Norborne Plant Site, then approximately 3.75 miles northwest where it would meet the existing rail line. Much of the longer segment follows along the West Fork of Wakenda Creek. A narrow wooded riparian corridor is present along the banks of the West Fork of Wakenda Creek. Construction of the northwestern railroad spur will likely impact some of the wooded riparian vegetation that occurs along the West Fork of Wakenda Creek; however, impacts to the riparian vegetation would likely only occur at creek crossings.

Construction of a railroad spur along the West Fork of Wakenda Creek will likely result in a relatively small impact to riparian habitat in the area. The impacts would be limited to the removal of riparian vegetation during construction and maintenance activities. The West Fork of Wakenda Creek is an intermittent stream and had no flow at the time of the August 2nd site visit. Because of the intermittent flows, intermittent streams typically do not usually support aquatic communities; therefore, no impacts to aquatic communities are anticipated. Best management practices, including storm water and erosion control measures, will be implemented during construction of any creek crossing to avoid potential impacts to the West Fork of Wakenda Creek. Where required by the U.S. Fish and Wildlife Service or the Missouri Department of Conservation, the clearing of mature trees along the West Fork of Wakenda Creek and in specific areas considered to be potential habitat along the proposed route for the railway corridor will occur between October 1 and March 31 to avoid impacting any Indiana bat potential roosting sites in the project area, as recommended by the Missouri Department of Conservation.

4.4 TRANSMISSION LINE ROUTES

Two transmission line routes will connect the Norborne site to substations located northeast and south of the Norborne Plant Site. There are four route alternatives being considered between the Norborne site and the Thomas Hill substation to the northeast. These four potential routes cross through Carroll, Chariton and Randolph Counties. There are nine route alternatives being considered between the Norborne Site and the Sedalia substation or Dresden substation to the south. Three additional route alternatives are being considered between the Sedalia substation and the Mt. Hulda substation and two additional route alternatives are being considered between the Dresden substation and the Mt. Hulda substation.

The transmission line will be constructed to span all streams, creeks and rivers, eliminating impacts to aquatic species of concern such as the lake sturgeon (*Acipenser fulvescens*), pallid sturgeon (*Scaphirhynchus albus*), flathead chub (*Platygobio gracilis*), Topeka shiner (*Notropis topeka*) or the Niangua darter (*Etheostoma nianguae*). Additionally, the interior least tern which inhabits sandbars in the rivers and creeks, will not be affected by the spanning of the waterways.

Following best management practices as recommended by the Missouri Department of Conservation and where required by the U.S. Fish and Wildlife Service or the Missouri Department of Conservation, activities related to tree clearing in specific areas considered to be

potential habitat should be limited to the late-fall to late winter to avoid interference with the breeding seasons of several protected species that could possibly found in the project area. Many of the birds, such as the king rail and the northern harrier are migratory birds that are not usually present during winter months. Other species like the eastern massasauga, the Gray bat, and the Indiana bat hibernate during the winter and would not easily be disturbed in their caves or hibernacula by construction of the transmission line routes. Based on available information, no cave habitats or hibernacula are known to occur or are expected to occur along the transmission line corridors; however, access to properties along the transmission routes was not available. Previously unknown caves or hibernacula may occur along a transmission line route. Construction activities within the vicinity of known locations of eastern massasauga, gray bats, and Indiana bats will be limited where required by the U.S. Fish and Wildlife Service or the Missouri Department of Conservation.

4.4.1. NORBORNE TO THOMAS HILL

4.4.1.1 ROUTE NT1

This route is composed of three segments A1, A2, and A6 and stretched a total of 69.8 miles crossing 11,183.8 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. Additionally, the area around the Thomas Hill substation contains several acres of “non-agricultural use land” that has been previously disturbed during construction of the Thomas Hill power plant. No impacts to protected species are anticipated to occur in the vicinity of the Thomas Hill substation. This route crosses 15 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

This route passes within one mile of the Swan Lake National Wildlife Refuge. This refuge is home to the largest of three populations of eastern massasaugas rattlesnake in the state. This route also crosses the Grand River in the vicinity of the Swan Lake National Wildlife Refuge. At the point of this route’s crossing, the Grand River appears to be surrounded by riparian forest which based upon the desktop survey appears to be contiguous with the Swan Lake National Wildlife Refuge and considered potential habitat for the eastern massasauga rattlesnake and potential roosting and nesting habitat for the bald eagle. Where required by the U.S. Fish and Wildlife Service or the Missouri Department of Conservation, tree clearing and construction along the Grand River should occur after the bald eagle roosting and nesting period and when eastern massasaugas rattlesnakes are hibernating. Should the forest indeed be contiguous, it is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys in the vicinity of the Grand River and other locations to determine if protected species are present within or along the proposed corridor.

4.4.1.2 ROUTE NT2

This route is composed of four segments A1, A2, A7, and A8 and stretched a total of 70.6 miles crossing 11,296.5 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. Additionally, the area around the Thomas Hill substation contains several acres of “non-agricultural use land” that has been previously disturbed during

construction of the Thomas Hill power plant. No impacts to protected species are anticipated to occur in the vicinity of the Thomas Hill substation. This route crosses 19 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

This route passes within one mile of the Swan Lake National Wildlife Refuge. This refuge is home to the largest of three populations of eastern massasaugas rattlesnake in the state. This route also crosses the Grand River in the vicinity of the Swan Lake National Wildlife Refuge. At the point of this route's crossing, the Grand River appears to be surrounded by riparian forest which based upon the desktop survey appears to be contiguous with the Swan Lake National Wildlife Refuge and considered potential habitat for the eastern massasauga rattlesnake and potential roosting and nesting habitat for the bald eagle. Where required by the U.S. Fish and Wildlife Service or the Missouri Department of Conservation, tree clearing and construction along the Grand River should occur after the bald eagle roosting and nesting period and when eastern massasaugas rattlesnakes are hibernating. Should the forest indeed be contiguous, it is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys in the vicinity of the Grand River and other locations to determine if protected species are present within or along the proposed corridor.

4.4.1.3 ROUTE NT3

This route is composed of four segments A1, A3, A4, and A8 and stretched a total of 61.9 miles crossing 9910.3 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. Additionally, the area around the Thomas Hill substation contains several acres of "non-agricultural use land" that has been previously disturbed during construction of the Thomas Hill power plant. No impacts to protected species are anticipated to occur in the vicinity of the Thomas Hill substation. This route crosses 18 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

This route passes within 3.5 miles of the Swan Lake National Wildlife Refuge. This refuge is home to the largest of three populations of eastern massasaugas rattlesnake in the state. This route also crosses the Grand River in the vicinity of the Swan Lake National Wildlife Refuge. At the point of this route's crossing, the Grand River appears to be surrounded by riparian forest which based upon the desktop survey appears to be contiguous with the Swan Lake National Wildlife Refuge and considered potential habitat for the eastern massasauga rattlesnake and potential roosting and nesting habitat for the bald eagle. Where required by the U.S. Fish and Wildlife Service or the Missouri Department of Conservation, tree clearing and construction along the Grand River should occur after the bald eagle roosting and nesting period and when eastern massasaugas rattlesnakes are hibernating. Should the forest indeed be contiguous, it is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys in the vicinity of the Grand River and other locations to determine if protected species are present within or along the proposed corridor.

4.4.1.4 ROUTE NT4

This route is composed of three segments A1, A3, and A5 and stretched a total of 67.2 miles crossing 10,754.9 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. Additionally, the area around the Thomas Hill substation contains several acres of “non-agricultural use land” that has been previously disturbed during construction of the Thomas Hill power plant. No impacts to protected species are anticipated to occur in the vicinity of the Thomas Hill substation. Almost 54 miles of this route follow existing transmission lines. This route crosses 14 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

This route is approximately 10 miles south of the Swan Lake National Wildlife Refuge; home to the largest of three populations of eastern massasaugas in the state. Surveys for the massasauga along this route are probably not necessary. Where required by the U.S. Fish and Wildlife Service or the Missouri Department of Conservation, tree clearing and construction along the Grand River should occur after the bald eagle roosting and nesting period. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys in the vicinity of the Grand River and other locations to determine if protected species are present within or along the proposed corridor. The area around the Thomas Hill substation contains several acres of “non-agricultural use land” and may also require preconstruction surveys.

4.4.2. NORBORNE TO MT. HULDA

4.4.2.1 NORBORNE TO SEDALIA, ROUTE NS1

This route is composed of three segments B1, B6, and B10 and stretched a total of 60.5 miles crossing 9,689.8 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 14 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

The habitat near along the route at the crossing of the Missouri river may be suitable for bald eagles to roost or nest. To minimize potential impacts to these potential sites, best management practices will be followed. In accordance with the Missouri Department of Conservation’s Best Management Practices for the Bald Eagle, construction of the transmission line corridors will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor.

4.4.2.2 NORBORNE TO SEDALIA, ROUTE NS2

This route is composed of four segments B1, B6, B9, and B11 and stretched a total of 60.8 miles crossing 9,734.7 acres of land. As previously noted in the vegetative description, a majority of

the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 14 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

The habitat near along the route at the crossing of the Missouri river may be suitable for bald eagles to roost or nest. To minimize potential impacts to these potential sites, best management practices will be followed. In accordance with the Missouri Department of Conservation's Best Management Practices for the Bald Eagle, construction of the transmission line corridors will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor.

4.4.2.3 NORBORNE TO SEDALIA, ROUTE NS3

This route is composed of four segments B1, B4, B7, and B10 and stretched a total of 56.7 miles crossing 9,071.0 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 10 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

The habitat near along the route at the crossing of the Missouri river may be suitable for bald eagles to roost or nest. To minimize potential impacts to these potential sites, best management practices will be followed. In accordance with the Missouri Department of Conservation's Best Management Practices for the Bald Eagle, construction of the transmission line corridors will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor.

The transmission line corridor section B7 crosses over a portion of the Blackwater River approximately 1 mile west of Sweet Springs. Although there will be no impacts to the waterway itself, there is a potential for impacting habitat on both sides of the creek. Best Management Practices should be followed during construction to prevent negative impacts on wildlife.

4.4.2.4 NORBORNE TO SEDALIA, ROUTE NS4

This route is composed of five segments B1, B4, B7, B9, and B11 and stretched a total of 57.0 miles crossing 9,115.9 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 10 perennial

streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

The habitat near along the route at the crossing of the Missouri river may be suitable for bald eagles to roost or nest. To minimize potential impacts to these potential sites, best management practices will be followed. In accordance with the Missouri Department of Conservation's Best Management Practices for the Bald Eagle, construction of the transmission line corridors will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor.

The transmission line corridor section B7 crosses over a portion of the Blackwater River approximately 1 mile west of Sweet Springs. Although there will be no impacts to the waterway itself, there is a potential for impacting habitat on both sides of the creek. Best Management Practices should be followed during construction to prevent negative impacts on wildlife.

4.4.2.5 NORBORNE TO SEDALIA, ROUTE NS5

This route is composed of five segments B1, B4, B5, B8, and B11 and stretched a total of 69.0 miles crossing 11,016.5 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 20 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

The habitat near along the route at the crossing of the Missouri river may be suitable for bald eagles to roost or nest. To minimize potential impacts to these potential sites, best management practices will be followed. In accordance with the Missouri Department of Conservation's Best Management Practices for the Bald Eagle, construction of the transmission line corridors will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor.

4.4.2.6 NORBORNE TO SEDALIA, ROUTE NS6

This route is composed of three segments B2, B7, and B10 and stretched a total of 52.0 miles crossing 8,316.7 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 7 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

The habitat near along the route at the crossing of the Missouri river may be suitable for bald eagles to roost or nest. To minimize potential impacts to these potential sites, best management practices will be followed. In accordance with the Missouri Department of Conservation's Best Management Practices for the Bald Eagle, construction of the transmission line corridors will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor.

The transmission line corridor section B7 crosses over a portion of the Blackwater River approximately 1 mile west of Sweet Springs. Although there will be no impacts to the waterway itself, there is a potential for impacting habitat on both sides of the creek. Best Management Practices should be followed during construction to prevent negative impacts on wildlife.

4.4.2.7 NORBORNE TO SEDALIA, ROUTE NS7

This route is composed of four segments B2, B7, B9, and B11 and stretched a total of 52.3 miles crossing 8,361.6 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 7 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

The habitat near along the route at the crossing of the Missouri river may be suitable for bald eagles to roost or nest. To minimize potential impacts to these potential sites, best management practices will be followed. In accordance with the Missouri Department of Conservation's Best Management Practices for the Bald Eagle, construction of the transmission line corridors will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor.

4.4.2.8 NORBORNE TO SEDALIA, ROUTE NS8

This route is composed of four segments B2, B5, B8, and B11 and stretched a total of 64.2 miles crossing 10,266.2 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 17 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

The habitat near along the route at the crossing of the Missouri river may be suitable for bald eagles to roost or nest. To minimize potential impacts to these potential sites, best management practices will be followed. In accordance with the Missouri Department of Conservation's Best

Management Practices for the Bald Eagle, construction of the transmission line corridors will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor.

4.4.2.9 NORBORNE TO SEDALIA, ROUTE NS9

This route is composed of three segments B3, B8, and B11 and stretched a total of 61.6 miles crossing 9,846.0 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 18 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

The habitat near along the route at the crossing of the Missouri river may be suitable for bald eagles to roost or nest. To minimize potential impacts to these potential sites, best management practices will be followed. In accordance with the Missouri Department of Conservation's Best Management Practices for the Bald Eagle, construction of the transmission line corridors will avoid clearing trees greater than 12 inches in diameter at breast height along the edge of the Missouri River between November 15 and July 15. These measures will be implemented to avoid impacting any over-wintering and nesting bald eagles that may be within the project area. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor.

4.4.2.10 SEDALIA TO MT. HULDA, ROUTE SMT1

This route is composed of two segments B12, and B14 and stretched a total of 27.5 miles crossing 4,403.7 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 12 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

Section B14 crosses Cole Camp Creek several times before reaching the Mt. Hulda substation. The area surrounding the Mt. Hulda substation is comprised of woody habitat that could possibly provide habitat to wildlife. The entire section follows an existing transmission line route and no impacts to potential protected species habitat would be expected.

4.4.2.11 SEDALIA TO MT. HULDA, ROUTE SMT2

This route is composed of two segments B12, and B15 and stretched a total of 29.7 miles crossing 4,772.3 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 8 perennial streams/rivers/creeks which

should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

Section B15 crosses Ross Creek approximately 4.75 miles west of the Mt. Hulda substation. The last 7 miles of this section prior to the substation is comprised of woody habitat that could possibly provide habitat to wildlife. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor. Best Management Practices should be followed during construction to prevent negative impacts on wildlife.

4.4.2.12 SEDALIA TO MT. HULDA, ROUTE SMT3

This route is composed of only one segment, B13, stretched a total of 25.2 miles crossing 4,048.3 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses 7 perennial streams/rivers/creeks which should not be impacted because the transmission lines will span the waterways, and appropriate sediment control measures will be in place prior to construction.

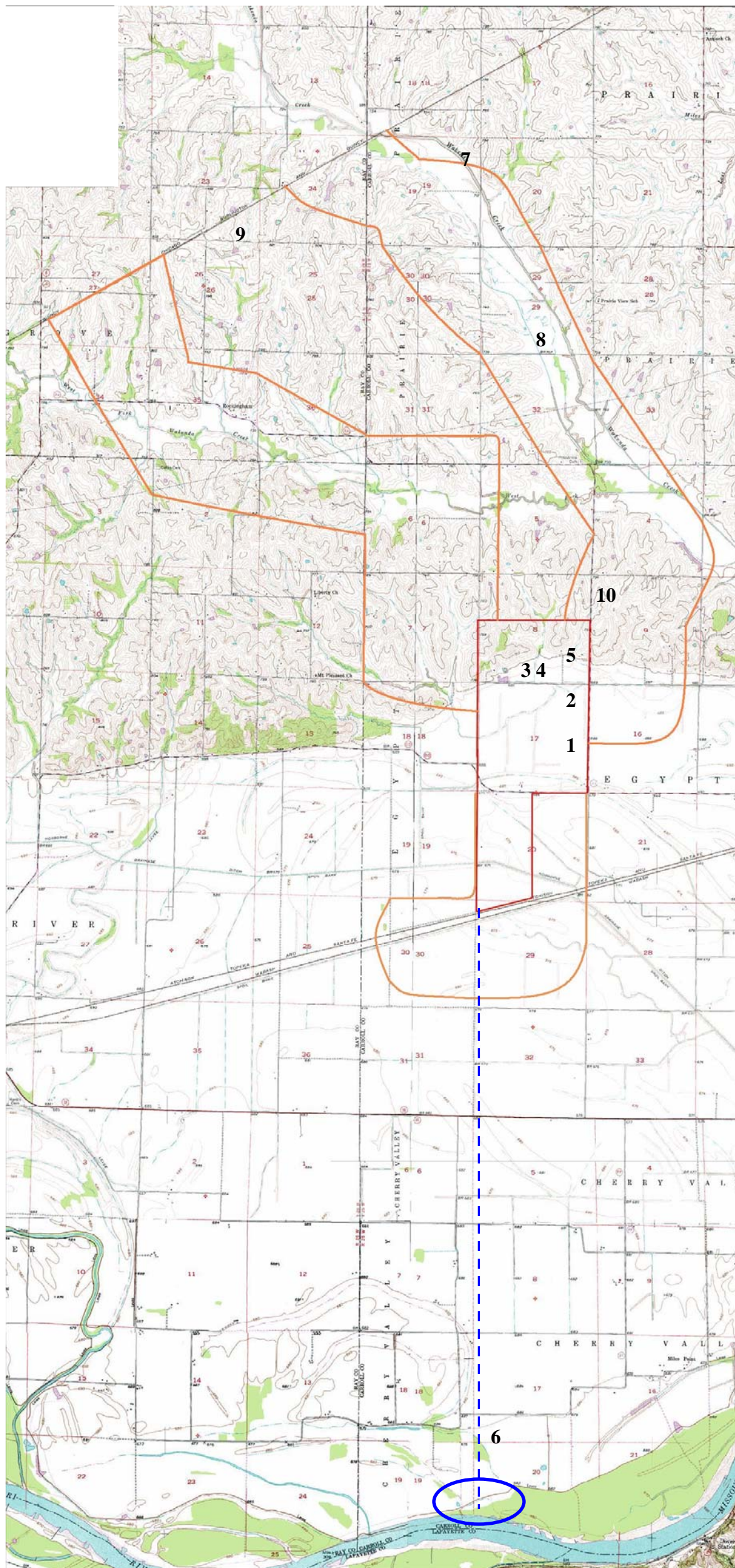
Section B13 crosses Williams Creek and Indian Creeks in the southern half of the route, approximately 2 miles and 6.5 miles north of the Mt. Hulda substation, respectively. The area surrounding the Mt. Hulda substation is comprised of woody habitat that could possibly provide habitat to wildlife. It is possible that the U.S. Fish and Wildlife Service or the Missouri Department of Conservation may require preconstruction surveys to determine if protected species are present within or along the proposed corridor. Best Management Practices should be followed during construction to prevent negative impacts on wildlife.

4.4.2.13 DRESDEN ALTERNATIVES, ROUTE DA1

This route is composed of one segment B16, stretched a total of 1.6 miles crossing 257.8 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses no perennial streams/rivers/creeks.

4.4.2.14 DRESDEN ALTERNATIVES, ROUTE DA2

This route is composed of one segment B17, stretched a total of 2.3 miles crossing 355.2 acres of land. As previously noted in the vegetative description, a majority of the route crosses previously disturbed agricultural areas and will predominantly impact crop fields and wooded fence row habitats. This route crosses no perennial streams/rivers/creeks.



LEGEND

 **Site Location**

 **Possible Railroad Spur Corridor**

 **Possible Lateral Collector Well Site**

 **Water Supply Line**

**Photograph Site**

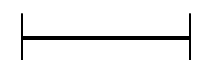

approx. 1 mile



Figure 1

Associated Electric
Cooperative, Inc.

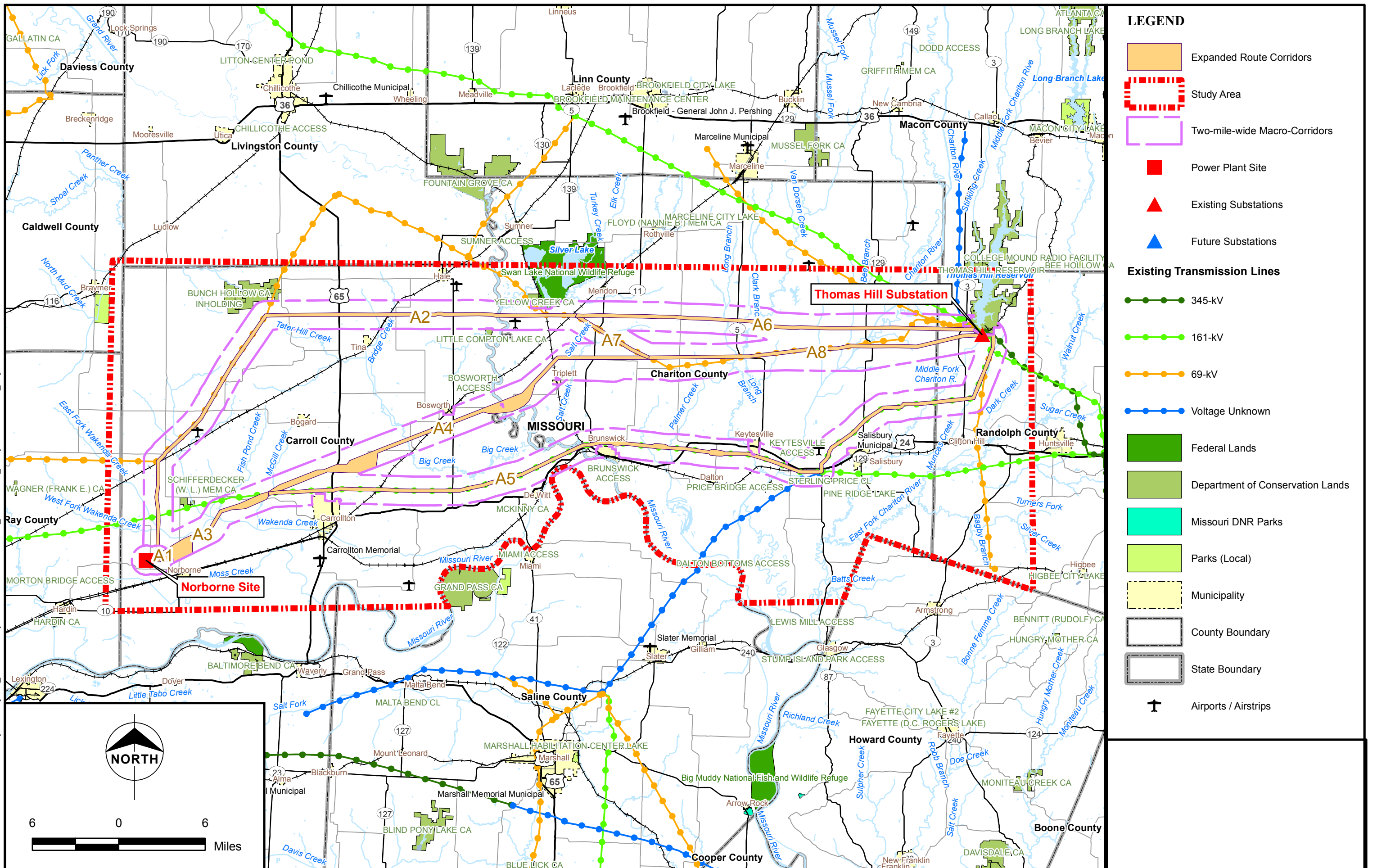
660MW Coal-Fired
Electric Generating
Plant

Norborne Site,
Missouri



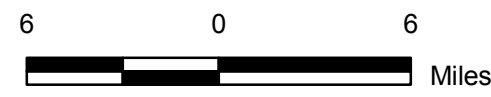
Locator Map

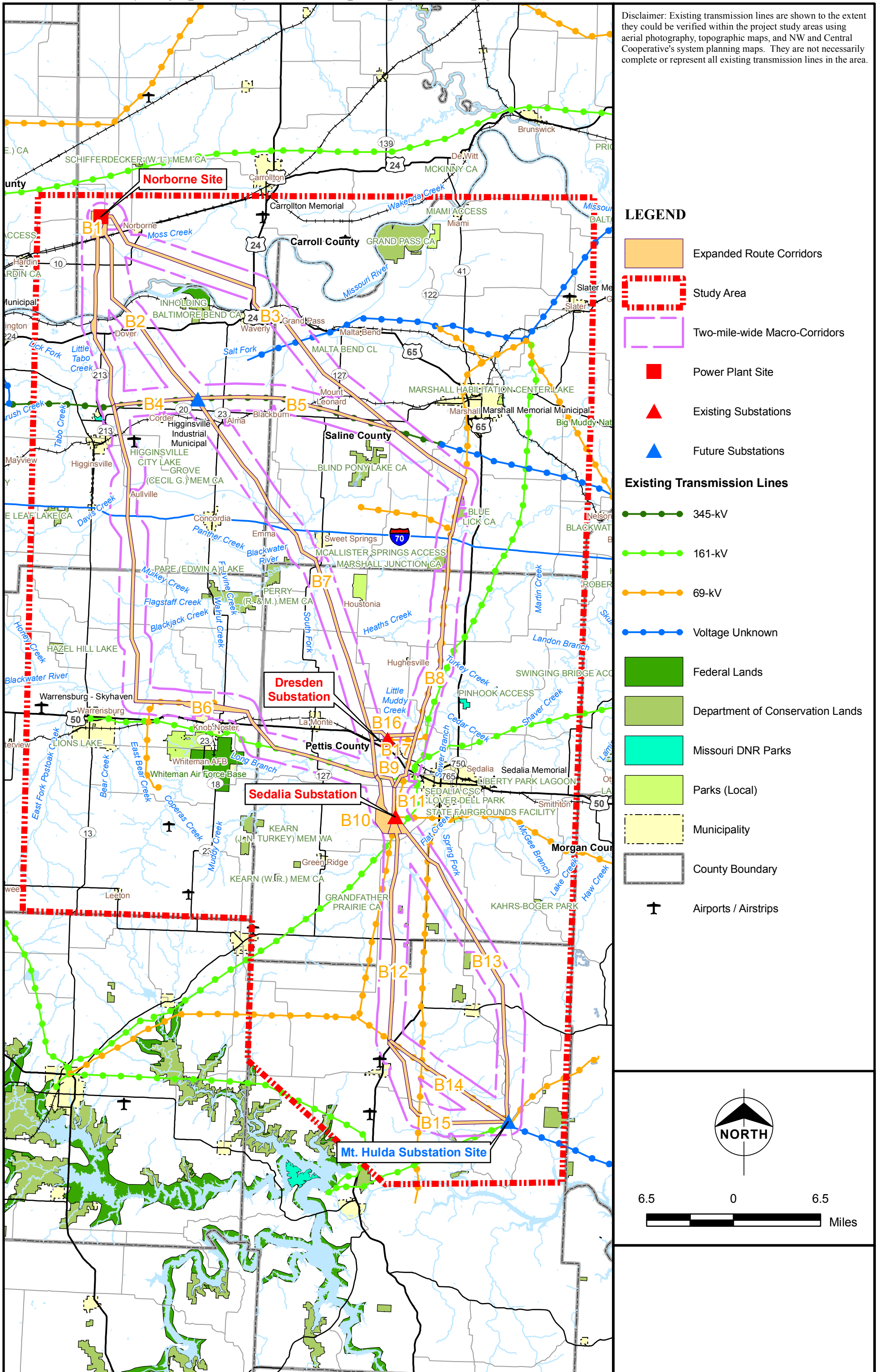
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LEGEND















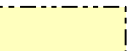


- Expanded Route Corridors
- Study Area
- Two-mile-wide Macro-Corridors
- Power Plant Site
- Existing Substations
- Future Substations
- Existing Transmission Lines**
- 345-kV
- 161-kV
- 69-kV
- Voltage Unknown
- Federal Lands
- Department of Conservation Lands
- Missouri DNR Parks
- Parks (Local)
- Municipality
- County Boundary
- State Boundary
- Airports / Airstrips





Disclaimer: Existing transmission lines are shown to the extent they could be verified within the project study areas using aerial photography, topographic maps, and NW and Central Cooperative's system planning maps. They are not necessarily complete or represent all existing transmission lines in the area.

LEGEND

-  Expanded Route Corridors
-  Study Area
-  Two-mile-wide Macro-Corridors
-  Power Plant Site
-  Existing Substations
-  Future Substations
- Existing Transmission Lines**
-  345-kV
-  161-kV
-  69-kV
-  Voltage Unknown
-  Federal Lands
-  Department of Conservation Lands
-  Missouri DNR Parks
-  Parks (Local)
-  Municipality
-  County Boundary
-  Airports / Airstrips





Photograph 1: Looking west into soybean field, middle of Section 17



Photograph 2: Looking south along soybean field, northeast corner of Section 17

Associated Electric Cooperative, Inc.
660-MW Coal-fired electric
generating plant
Norborne, Carroll County, Missouri



Site Photographs
Taken 02 August 2006



Photograph 3: Looking west at wetland marsh, south-central Section 8



Photograph 4: Looking east at wetland marsh, south-central Section 8

Associated Electric Cooperative, Inc.
660-MW Coal-fired electric
generating plant
Norborne, Carroll County, Missouri



Site Photographs
Taken 02 August 2006



Photograph 5: Looking north at winter wheat field, southeast corner of Section 8



Photograph 6: Looking west-southwest at corn field in southwest Section 18 (Cherry Valley)

Associated Electric Cooperative, Inc.
660-MW Coal-fired electric
generating plant
Norborne, Carroll County, Missouri



Site Photographs
Taken 02 August 2006



Photograph 7: Looking northwest at Wakenda Creek in northeast corner of Section 19 (T53N, R25W)



Photograph 8: Looking northwest into creek bed in south-central Sec. 29 (T53N, R25W)

Associated Electric Cooperative, Inc.
660-MW Coal-fired electric
generating plant
Norborne, Carroll County, Missouri



Site Photographs
Taken 02 August 2006



Photograph 9: Looking southeast at pasture in southwest quarter of Section 23 (T53N, R 26W)



Photograph 10: Looking north at corn field along west side of Section 9 (T52N, R25W)

Associated Electric Cooperative, Inc.
660-MW Coal-fired electric
generating plant
Norborne, Carroll County, Missouri



Site Photographs
Taken 02 August 2006