



October 27, 2023

Emily Truebner  
Vice President, Permitting & Environmental  
Savion, LLC  
422 Admiral Blvd.  
Kansas City, MO 64106

Re: Free State Solar Project, Habitat Assessment  
Douglas County, Kansas  
Burns & McDonnell Project Number: 147658

Dear Ms. Truebner:

Free State Solar Project, LLC retained Burns & McDonnell to provide habitat assessment services for the proposed Free State Solar Project (Project) located in Douglas County, Kansas. Burns & McDonnell conducted a habitat evaluation of the active agricultural area and small forested area within the Project to determine the potential for habitats that may support species protected by the Endangered Species Act (ESA), Bald and Golden Eagle Protection Act (BGEPA), and Migratory Bird Treaty Act (MBTA) (Appendix A; Figure A-1). The following sections provide information on the proposed Project and summarize the habitat assessment.

### **PROJECT AREA DESCRIPTION**

The Project includes proposed construction of a new utility-scale solar facility in Douglas County, Kansas. The Project would include the construction of solar arrays, associated access roads, laydown yard, and other appurtenant facilities. The Project is located approximately 3 miles north of Lawrence, Kansas. The habitat assessment was conducted on approximately 1,153 acres (Survey Area).

### **ANALYSIS BY SPECIES**

This habitat assessment includes species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). The USFWS Information, Planning, and Conservation System (IPaC) and Kansas Department of Wildlife and Parks (KDWP) county list were used to identify state and federally protected species that may occur within the Survey Area. Six endangered and two threatened species protected by the ESA were identified by the IPaC. Fifteen additional species were identified by the KDWP state listed species (Table 1). No designated critical habitat for any federally protected species is located within the Survey Area.

Two Burns & McDonnell biologists conducted a site visit to evaluate the Survey Area for potential habitat for state and federally protected species by walking through the area with a global positioning system (GPS) unit. The site visit included looking for trees with exfoliating bark, snags, cracks, crevices, mesic prairie wetlands, overgrown right-of-way (ROW) habitat, and other characteristics that are listed below. Desktop observations showed most of the Project was made up of active agricultural fields and a small, forested corridor on a northeast section of

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the Survey Area. One potential bat roost tree was identified during the survey. This tree was not within larger areas of potentially suitable protected bat species habitat. A photograph was taken during the site visit and representative photographs of potential roost trees identified and the surrounding landscape are included in Appendix B.

**Table 1: Federal and State Threatened and Endangered Species Potentially Occurring in Douglas County, Kansas**

Common Name	Scientific Name	State Status	Federal Status
<b>Mammals</b>			
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	None	Endangered
Eastern Spotted Skunk	<i>Spilogale putorius</i>	Threatened	None
<b>Birds</b>			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	BGEPA	BGEPA
Least Tern	<i>Sterna antillarum</i>	Endangered	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened	Threatened
Snowy Plover	<i>Charadrius alexandrinus</i>	Threatened	None
Whooping Crane	<i>Grus americana</i>	Endangered	Endangered
<b>Fishes</b>			
Flathead Chub	<i>Platygobio gracilis</i>	Threatened	None
Hornyhead Chub	<i>Nocomis biguttatus</i>	Threatened	None
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered	Endangered
Plaines Minnow	<i>Hybognathus placitus</i>	Threatened	None
Shoal Chub	<i>Macrhybopsis hyostoma</i>	Threatened	None
Sicklefin Chub	<i>Macrhybopsis meeki</i>	Endangered	None
Silver Chub	<i>Macrhybopsis storeiana</i>	Endangered	None
Sturgeon Chub	<i>Macrhybopsis gelida</i>	Threatened	None
Topeka Shiner	<i>Notropis topeka</i>	Threatened	Endangered
Western Silvery Minnow	<i>Hybognathus argyritis</i>	Threatened	None
<b>Flowering Plants</b>			
Mead's Milkweed	<i>Asclepias meadii</i>	None	Threatened
Western Prairie Fringed Orchid	<i>Platanthera praeclara</i>	Threatened	None
<b>Invertebrates</b>			
American Burying Beetle	<i>Nicrophorus americanus</i>	Endangered	Endangered
Mucket Mussel	<i>Actinonaias ligamentina</i>	Endangered	None

Source: USFWS IPaC; <http://ecos.fws.gov/ipac>; accessed 6/27/20220 and <https://ksoutdoors.com/Services/Threatened-and-Endangered-Wildlife/List-of-all-Kansas-Counties/Douglas>

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### **Northern Long-eared Bat (NLEB)**

The NLEB hibernates in caves or abandoned mines during the winter. During the summer, the NLEB may roost beneath loose bark of live, dead, or dying trees. Additionally, the NLEB may roost in barns, in sheds, under bridges, or in other buildings that have little human disturbance. Female NLEBs typically roost in a maternity colony, while male NLEBs tend to roost singly or in small groups. Roosting and foraging habitat includes forests, wooded fence rows, and riparian areas. The primary causes of decline in NLEB populations are the rapid spread of white-nose syndrome (WNS) across the eastern United States and the Midwest, habitat degradation, and human disturbances of hibernaculum during the bats' hibernation.

The USFWS has issued a final 4(d) rule to allow for more flexible implementation of the ESA and "to tailor prohibitions to those that make the most sense for protecting and managing at-risk species." The final 4(d) rule for the NLEB prohibits incidental take from certain activities within the WNS buffer zone (areas within 150 miles of WNS-positive counties). Specifically, the 4(d) rule prohibits incidental take from tree removal within 150 feet of known maternity trees during the pup season (June 1 to July 31) or within 0.25 mile of known hibernacula. Incidental take from tree removal outside of these areas and timeframes is not prohibited.

Based on the WNS buffer zone map updated by USFWS on November 26, 2019, the Project will occur within the WNS buffer zone. Thus, the Project should avoid cutting trees within 150 feet of known maternity trees from June 1 to July 31 and within 0.25 mile of known hibernacula. Based on previous discussions with Kansas USFWS, no NLEB maternity trees or hibernaculum records are present in the vicinity of the Project. If tree removal for the Project does not occur from June 1 to July 31, the activity would not result in prohibited incidental take under the final 4(d) rule for NLEB. Thus, the Project **may affect but is not likely to adversely affect** the NLEB.

### **Eastern Spotted Skunk**

The eastern spotted skunk is an endangered species in Kansas that prefers forest edges and upland prairie grasslands where rock outcrops and shrub clumps are present. Woody fencerows, overgrown areas, and abandoned farm buildings are also important habitat for this species. No rock outcrops or shrub clumps were present within the Survey Area. Small riparian areas within the Survey Area did not provide enough suitable habitat or cover for the eastern spotted skunk. Based on the lack of suitable habitat, Burns & McDonnell has concluded that the proposed Project will have **no effect** on the eastern spotted skunk.

### **Bald Eagle**

The BGEPA prohibits take of bald eagles unless otherwise permitted. No bald eagle nests were observed within the vicinity of the Project during the habitat assessment field surveys. If an active bald eagle nest is observed during construction, the USFWS should be contacted, and

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construction activities should not occur within a 660-foot buffer around the active bald eagle nest to stay within Federal and State regulatory compliance. The Project is anticipated to have **no effect** on bald eagles. No stick nests were documented inside of the Survey Area.

### **Least Tern, Piping Plover, and Snowy Plover**

The least tern, piping plover, and snowy plover occupy similar habitats in Kansas. These species typically nest on wide beaches and sandbars that typically have little to no vegetative cover and are associated with large wetlands, salt flats, and perennial rivers and streams. Results of the habitat assessment site survey indicates that no potential habitat for the least tern, piping plover, and snowy plover occurs along the intermittent streams and small isolated wetlands within the Survey Area. Additionally, no exposed salt flats, beaches or sand bars are within the vicinity of the proposed Project. The Project as proposed would have **no effect** on least terns, piping plovers, or snowy plovers.

### **Whooping Crane**

Whooping cranes are a federally endangered species that migrate through Kansas from late March through early May during the spring migration and from October to mid-November during the fall migration. Whooping cranes roost in wide river channels, wetlands, and farm ponds. They feed in nearby grassland and cropland. Wetlands used include permanent wetlands as well as shallow, temporary wetlands occurring in cropland. Whooping cranes probe in loose, flooded, or sandy soils for subsurface insects, amphibians, clams, crayfish, tubers; on the surface of the ground for insects, amphibians, reptiles, mice, voles; and in low vegetation for insects, berries, and seeds. Suitable stopover locations during the spring and fall migrations appear to be resting areas with feeding sites, and reasonable isolation from human developments and/or disturbances. According to a study of migrating whooping cranes, most wetlands used for roosting were less than 9.9 acres in size and within 3,280 feet of a suitable feeding site and more than 40 percent of roosting wetlands were less than 1.2 acres in size.

Results of the wetland delineation and protected species habitat assessment site survey identified 11 wetland features connecting to various ephemeral and intermittent streams within the Survey Area. No exposed salt flats, beaches, or sand bar habitats are within the vicinity of the Project. Only 3 of the 11 wetlands within the Survey Area contained standing water at the time of the field survey. These 3 wetlands were PUB wetlands while the remaining 8 wetlands were PEM wetlands. Ephemeral streams were mostly dry and intermittent streams contained stagnant water at the time of survey. None of the streams and PEM wetlands within the Survey Area supported fish, crayfish, aquatic macroinvertebrate, or large amphibian populations that would attract migrating whooping cranes while the PUB wetlands within the cropland **may affect but is not likely to adversely affect** migrating whooping cranes.

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### **Flathead Chub, Hornyhead Chub, Plains Minnow, Shoal Chub, Sicklefin Chub, Silver Chub, and Sturgeon Chub**

The flathead chub, hornyhead chub, plains minnow, shoal chub, sicklefin chub, silver chub, and sturgeon chub occupy similar habitats in Kansas. These species generally prefer large, turbid rivers with sand or gravel substrate, areas of strong flow or high and low extremes for flow rates. Ephemeral and intermittent streams within the Survey Area did not contain the flow or characteristics needed to provide sufficient habitat for these species. Therefore, the Project will have **no effect** on the flathead chub, hornyhead chub, plains minnow, shoal chub, sicklefin chub, silver chub, and sturgeon chub because potential habitat is not present within the Survey Area.

### **Topeka Shiner**

The Topeka shiner is a federally endangered and state threatened species that generally occupies small streams containing gravel or sand substrates with high water quality. The proposed Survey Area does not contain any streams that could support the Topeka shiner, therefore, the Project proposed would have **no effect** on the Topeka shiner.

### **Pallid Sturgeon**

The pallid sturgeon is a federally endangered species that is endemic to the Missouri River and lower Mississippi River. This species feeds near the bottom of river channels on small fish and aquatic insects. The proposed Survey Area does not cross any major rivers that could support the pallid sturgeon. Best management practices (BMPs) would be implemented to control stormwater and erosion during Project construction. The Project proposed would have **no effect** on the pallid sturgeon.

### **Western Silvery Minnow**

The western silvery minnow is a state threatened species that generally occupies the Missouri River along with its creeks and backwaters of the floodplain. This species also used to occupy the lower Kansas River. The western silvery minnow does not occur in strong currents, but prefers deep water where flow is low with silt bottoms. The proposed Survey Area does contain creeks adjacent to the Kansas River and its floodplain but does not contain streams with relatively deep water or fall within the floodplain. Therefore, the Project as proposed is anticipated to have **no effect** on the western silvery minnow.

### **Mead's Milkweed**

Mead's milkweed is a federally threatened plant that occurs in moderately wet to moderately dry upland tallgrass prairie or glade/barren habitat characterized by native vegetation adapted for drought and fire. It persists in stable late-successional native prairie habitats. The Project occurs in a rural area on the outskirts of Lawrence Kansas and primarily contains agricultural fields and is adjacent to existing road and railroad corridors. Mead's milkweed does not typically occur in

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active croplands. Therefore, the Project as proposed **may affect but is not likely to adversely affect** Mead's milkweed.

### **Western Prairie Fringed Orchid**

Western prairie fringed orchid is a federally threatened plant that is typically found in unplowed native prairies and sedge meadows, while also occurring in disturbed sites such as old fields, ditches, and borrow pits. The Project occurs within active agricultural fields and is adjacent to existing road and railroad corridors, including roadside ditches. No western prairie fringed orchids were observed within the Survey Area. Therefore, Burns & McDonnell has concluded that the proposed Project **may affect but is not likely to adversely affect** the western prairie fringed orchid.

### **American Burying Beetle**

The American burying beetle is a federally endangered species that is generally found in upland grassland prairies with loose sandy or clay loam soils. This species is typically found in the eastern one-third of Kansas. The Survey Area is mostly comprised of active croplands with very small riparian corridors in the northeast portion of the Project. Therefore, the Project as proposed **may affect but is not likely to adversely affect** the American burying beetle.

### **Mucket Mussel**

The mucket mussel is an endangered species in Kansas that is typically found along the Marais des Cygnes River. The species is generally found in large creeks or small rivers with gravel, gravel-sand, and gravel-silt substrates with moderate to swift currents. The Survey Area is not along the Marais des Cygnes River and contains dry to low flow streams with silty clay loam substrates. Therefore, the Project proposed is anticipated to have **no effect** on the mucket mussel.

### **CONCLUSION**

Based on the results of this habitat assessment, the Project as proposed is anticipated to have **no effect** on least tern, piping plover, snowy plover, flathead chub, hornyhead chub, plains minnow, shoal chub, sicklefin chub, silver chub, sturgeon chub, Topeka shiner, pallid sturgeon, western silvery minnow, mucket mussel, eastern spotted skunk, and bald eagle. The Project **may affect but is not likely to adversely affect** the whooping crane, American burying beetle, Mead's milkweed, western prairie fringed orchid, and NLEB. Tree clearing for the Project is recommended to occur from October 15 to March 31 to minimize impacts to protected bat species that may roost and forage for insects in the vicinity of the Project.

If you have questions regarding this habitat evaluation, please contact Bryan Gasper at 816-351-5885 or [bgasper@burnsmcd.com](mailto:bgasper@burnsmcd.com).



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Sincerely,

A handwritten signature in black ink that reads "Bryan R. Gasper".

Bryan Gasper  
Associate Environmental Scientist

Attachments:

Appendix A - Habitat Assessment Figure  
Appendix B - Photographs

cc: Justin Bailey – Burns & McDonnell

**APPENDIX A - HABITAT ASSESSMENT FIGURES**



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Service Layer Credits: World Street Map: City of Lawrence, Kansas, Missouri Dept. of Conservation, Missouri DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc. METINASA, USGS, EPA, NPS, USDA

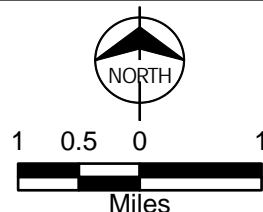
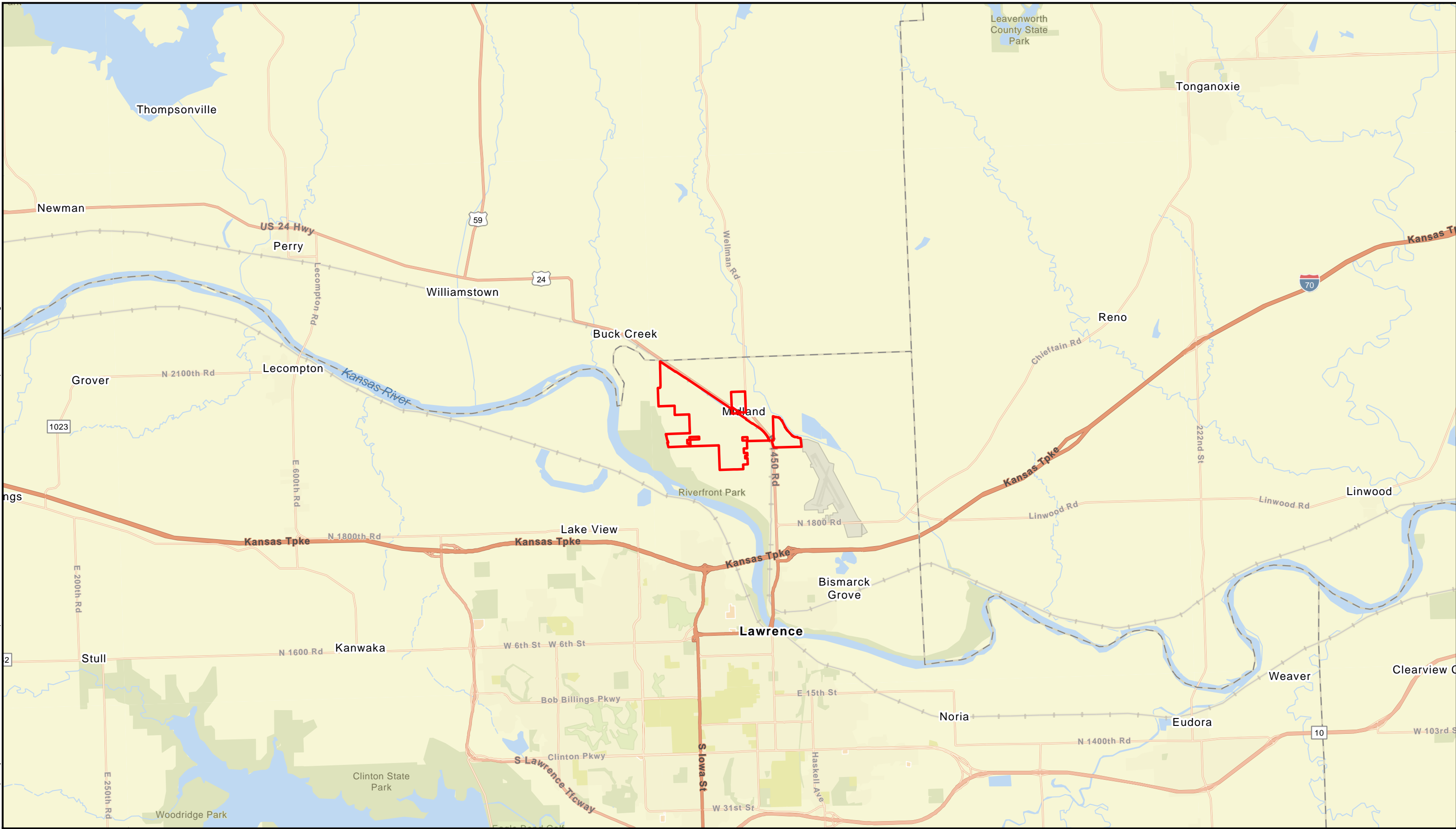
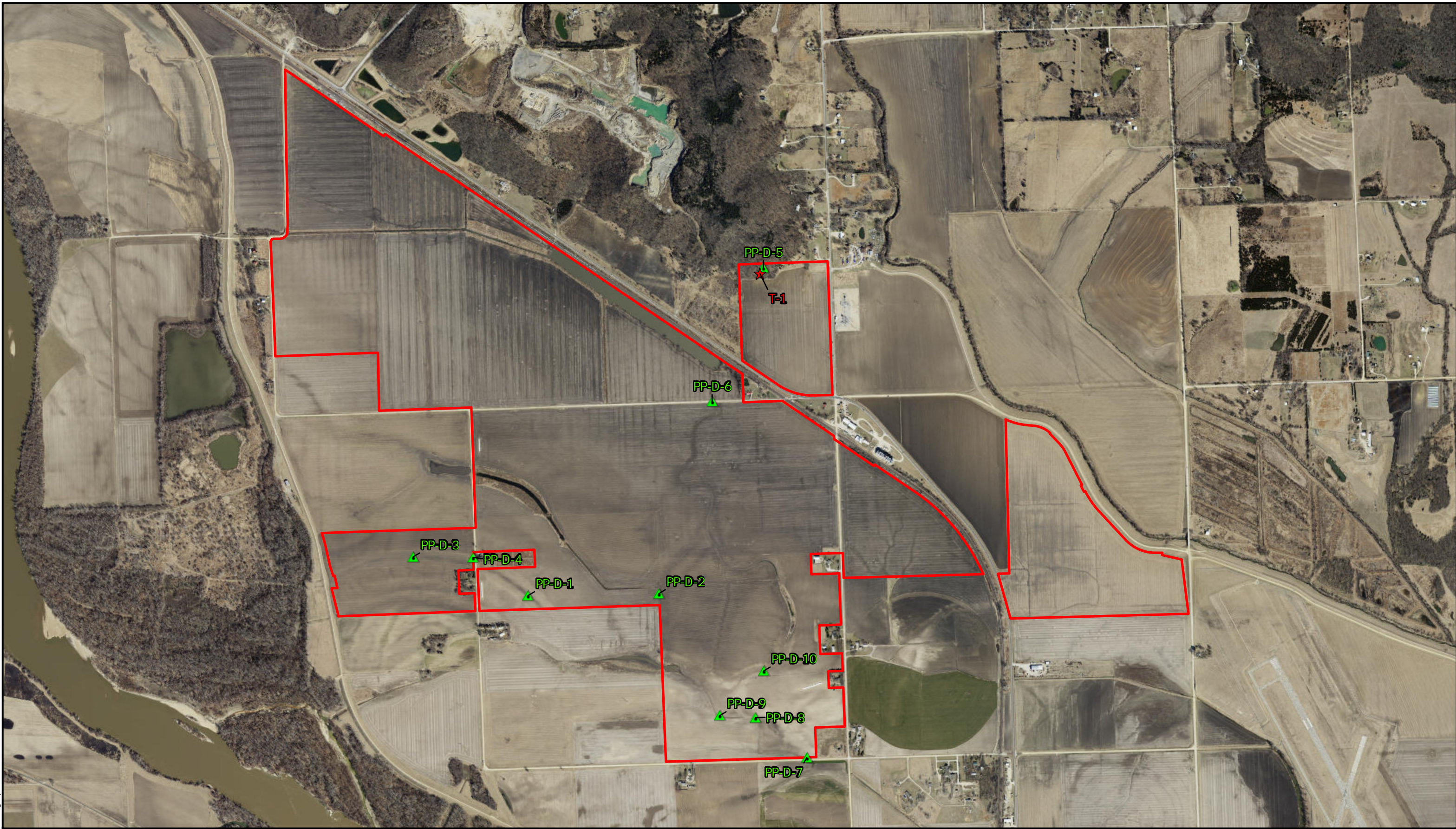


Figure A-1  
General Location Map  
Free State Solar Project  
Free State Solar Project, LLC  
Douglas County, Kansas



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Service Layer Credits: World Imagery: CITY OF LAWRENCE DG CO KS, Maxar, Microsoft



- Survey Area
- Photo Point (PP)
- Potential Roost Tree (PRT)

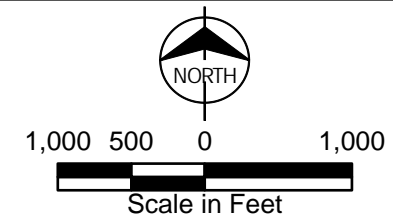


Figure A-2  
Habitat Assessment  
Free State Solar Project  
Free State Solar Project, LLC  
Douglas County, Kansas



**APPENDIX B - PHOTOGRAPHS**



Photograph C-1: View of Potential Roost Tree (T)-1, facing south.



Photograph C-2: View from Photo Point (PP)-D-1, facing northwest.





Photograph C-3: View from PP-D-2, facing north.



Photograph C-4: View from PP-D-3, facing east.





Photograph C-5: View from PP-D-4, facing west.



Photograph C-6: View from PP-D-5, facing west.





Photograph C-7: View from PP-D-6, facing southwest.



Photograph C-8: View from PP-D-7, facing west.





Photograph C-9: View from PP-D-8, facing northwest.



Photograph C-10: View from PP-D-9, facing northeast.





Photograph C-11: View from PP-D-10, facing east.