Appendix L. State- and Federally Listed Species Descriptions

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INTRODUCTION

This document provides details regarding the state- and federally listed species with the potential to occur at the Silver Queen Wind Farm Project (Project) in Carroll and Crawford counties, Iowa. These species descriptions detail the life histories, habitats, and potential presence within the Proposed Project Area (PPA).

FEDERALLY LISTED SPECIES

Northern Long-Eared Bat

The PPA is within the western portion of the estimated range for the Northern Long-eared bat (NLEB), which extends through the Midwest (Bat Conservation International [BCI] 2023a). The species is known to occur in Iowa throughout the year, including during hibernation, spring and fall migrations from and to hibernacula, and the summer maternity season (Janke 2018). While the NLEB is present year-round, it is more active in Iowa during the summer (USFWS 2013b).

According to the environmental review conducted by the IDNR for rare species or significant natural communities, there are no records of NLEB hibernacula in or within 10 miles of the PPA. The only documented bat hibernacula in Iowa occur in Floyd, Clayton, Dubuque, Fayette, Jackson, Jones, and Winneshiek counties in or near these karst features based on published research and a census of bat hibernacula in Iowa caves by the Iowa Grotto, with the closest (Floyd County) approximately 125 miles east of the Project (Figure L-1; Dixon 2010). Since there are no known hibernacula present within the PPA, the Project does not expect to influence NLEB swarming events near hibernacula.

As discussed in Section 3.5, the Project is in the Steeply Rolling Loess Prairies Level IV Ecoregion (Chapman et al. 2002), which covers six HUC-12 watersheds: the Upper East Boyer River, Upper Brushy Creek, Headwaters West Nishnabotna River, Upper West Fork West Nishnabotna River, Lower East Boyer River, and Middle East Boyer River. There are known NLEB occurrences in the Middle and Lower East Boyer River HUC-12 watersheds, which are crossed by the gen-tie line (Figure L-2; A. Andress, USFWS, pers. comm., August 25, 2023). The overlap between the gen-tie line and the Lower East Boyer River watershed occurs in the southern portion of the watershed where there is limited suitable forested habitat for NLEBs (Figure L-3).

The NLEB is a forest bat species that roosts alone or in colonies under bark, cavities, or crevices in living or dead trees (BCI 2023a). The NLEB prefers larger areas of unfragmented forests, between 5 to 10 acres. Based on a desktop analysis of aerial photography, three woodlands were found to be greater than 5 acres and less than 7 acres in size within the Wind Farm Boundary (Figures L-3 and L-4). Based on the small woodland size and fragmented landscape, these woodlands provide a limited amount of habitat for NLEB. NLEBs are known to forage mainly within and around wooded areas, traveling between 131 feet (Jantzen and Fenton 2013) to 410 feet (Warren 2018) from roosting locations, rather than foraging along riparian streams (Brack and Whitaker 2001, USFWS 2022a).

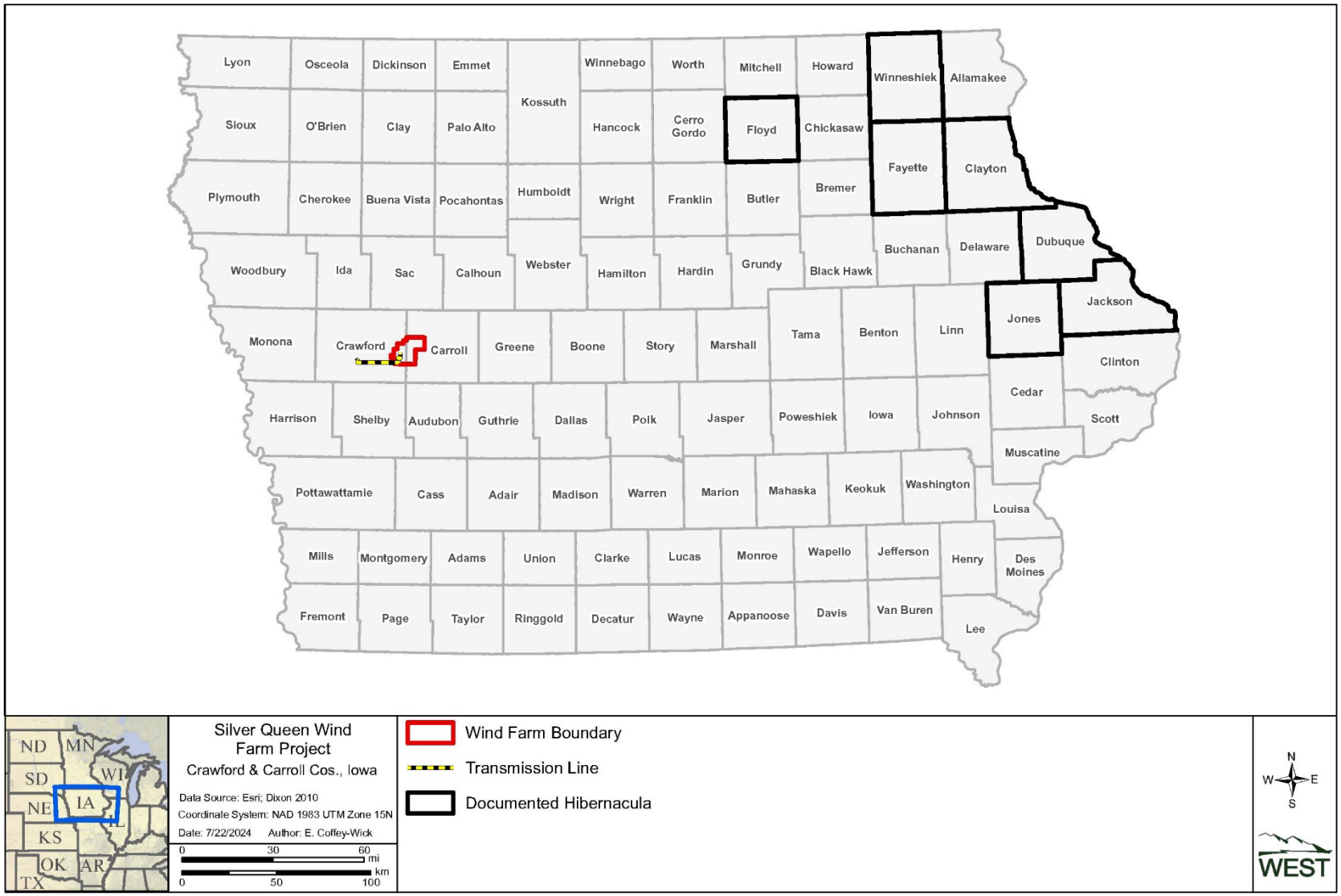

Figure L-1. Iowa counties with documented bat hibernacula.

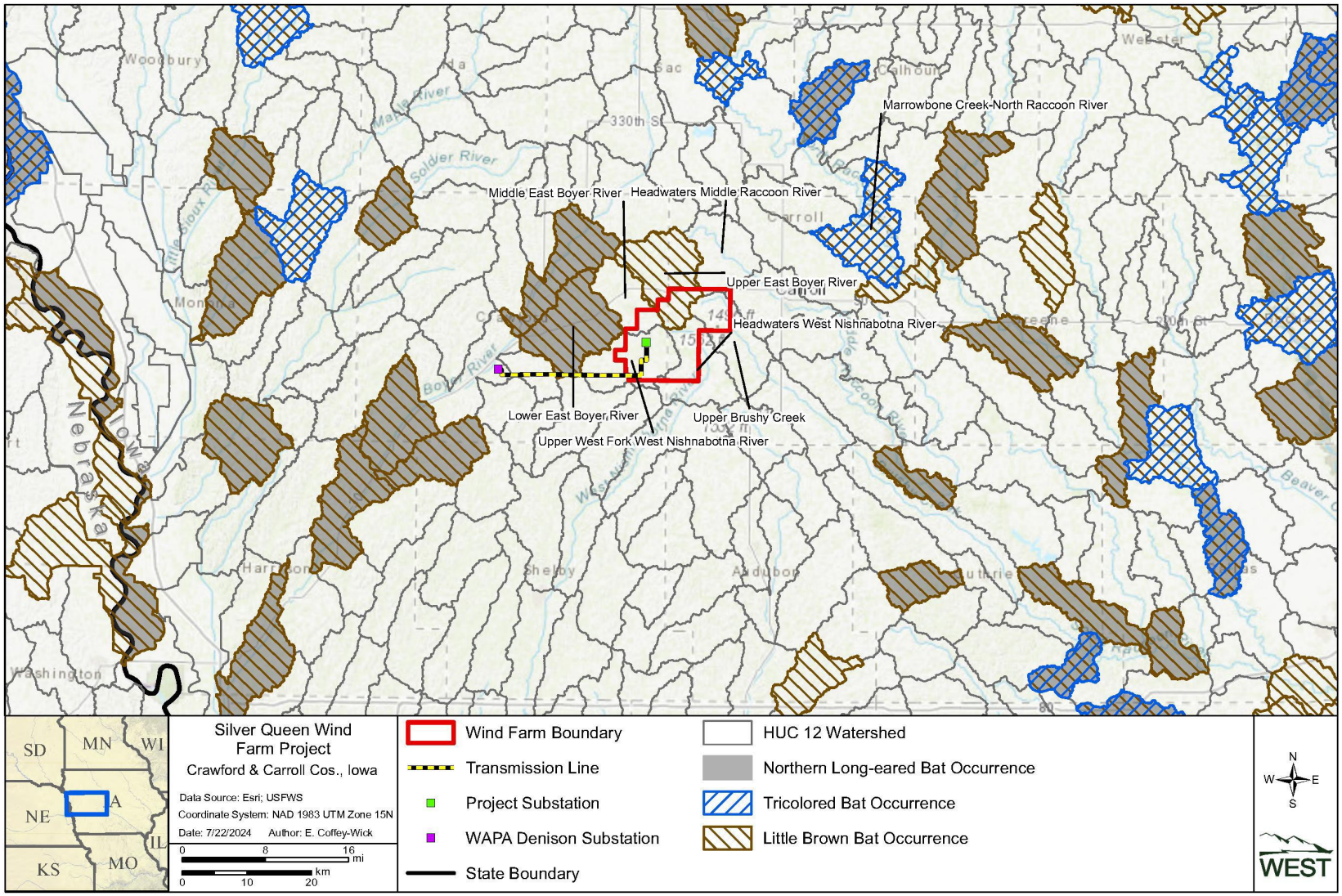

Figure L-2. Northern long-eared, tricolored, and little brown bat occurrences in Iowa based on USFWS data.

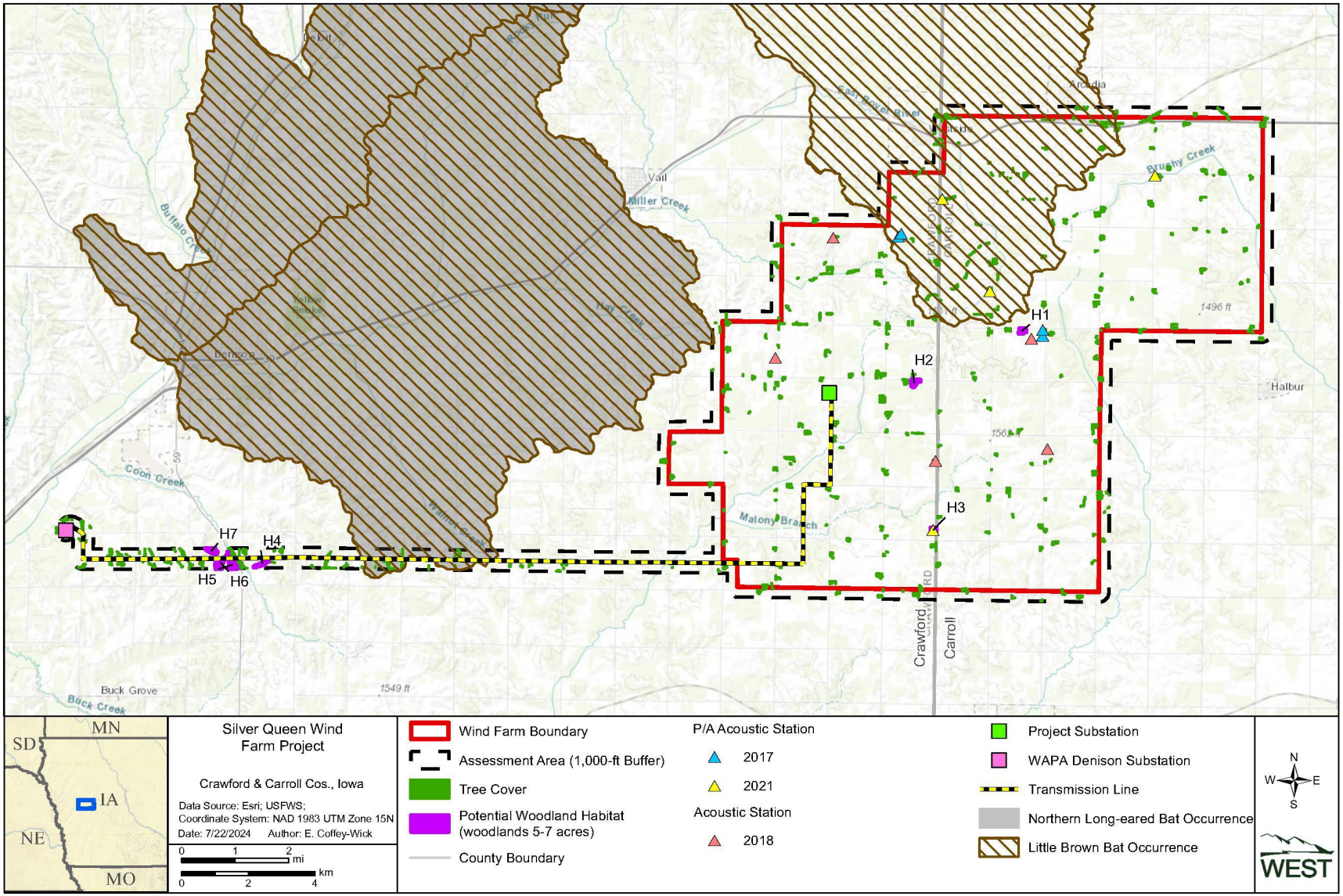

Figure L-3 Tree cover within the PPA.

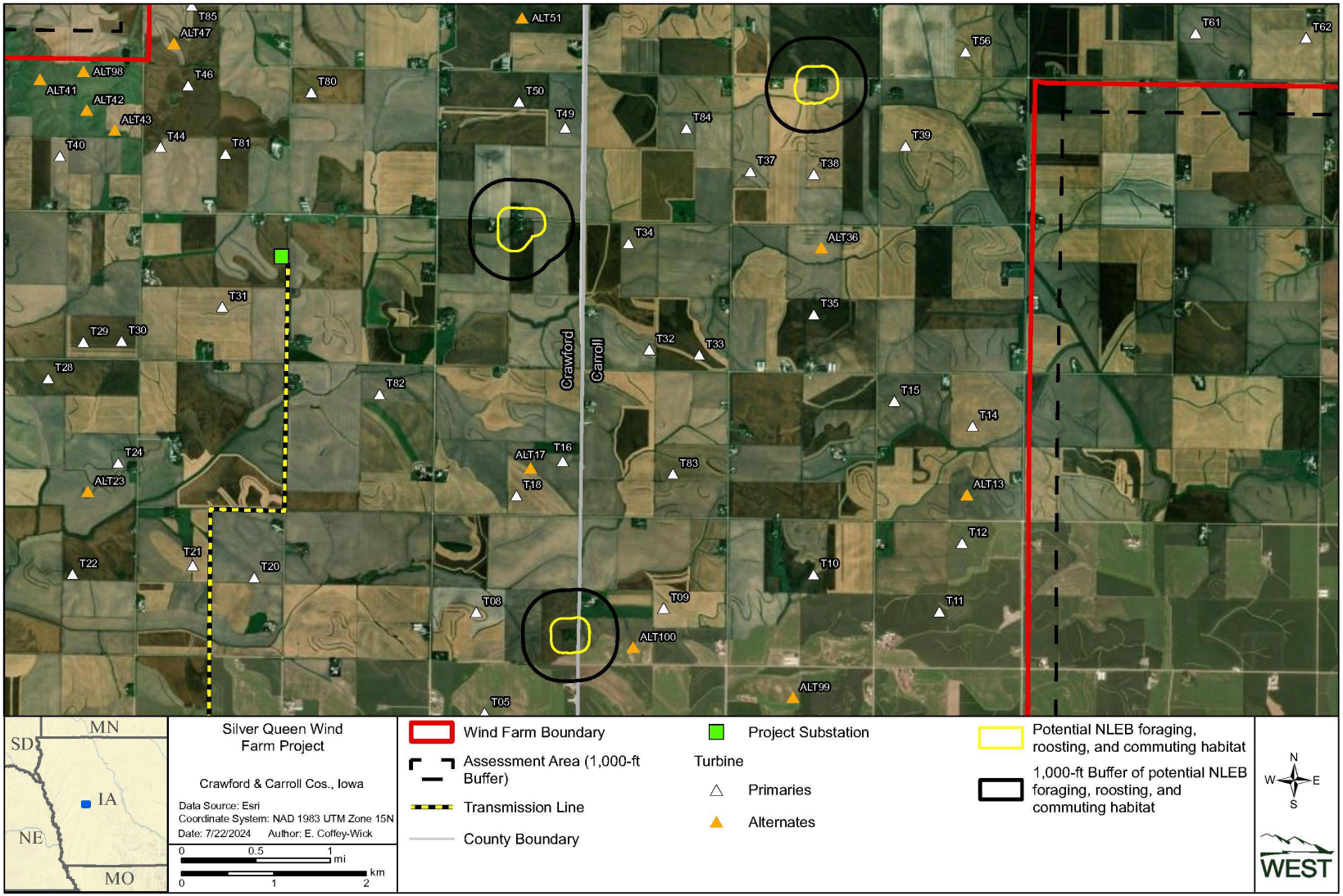

Figure L-4. Potential northern long-eared bat foraging, roosting, and commuting habitat.

Bat activity acoustic studies were completed within the Wind Farm Boundary in 2018, with 12.3% of calls classified as HF calls. NLEB calls are included in the HF category (Bay et al. 2019b). However, this data cannot be used to confirm a species' presence since the surveys were conducted with the objective of estimating the level of bat activity at the Project and did not follow USFWS presence / probable absence survey protocols. Thus, while this information can be used to determine whether NLEB may have been present in 2018 at the time the acoustic surveys were conducted, this data cannot be used to determine a species' prevalence (see Appendix H).

Silver Queen conducted acoustic summer presence / probable absence surveys for the NLEB at the Project in 2017 and 2021 (Appendix H). The surveys were conducted in accordance with the *Northern Long-eared Bat Interim Conference and Planning Guidance* (USFWS 2014) for both years, the USFWS 2017 protocols during the 2017 survey (USFWS 2017), and the USFWS 2020 protocols during the 2021 survey (USFWS 2020b). The 2021 surveys used two detector locations within the 9.6 acres of suitable summer habitat, which exceeded the survey effort established in the guidelines that recommended a minimum of one detector location per 123.0 acres of suitable summer habitat. Potential NLEB calls were flagged during both 2017 and 2021 surveys using the automated bat call identification program, Kaleidoscope (Wildlife Acoustics, Maynard, Massachusetts). Calls identified as NLEBs by the automated software were qualitatively analyzed by a WEST biologist experienced with acoustic identification and who met required USFWS qualifications to confirm species identification. In addition, if a night exceeded the maximum likelihood threshold (p-value < 0.05) for NLEBs, all acoustic files from that night received qualitative review.

No NLEB calls were identified as a result of the analysis (Sichmeller and Parrott 2023) of 2017 or 2021 data. Therefore, acoustic survey results showed probable absence of the NLEB within the study area during the summer. The species could pass through the PPA seasonally in the spring and fall, although no spring or fall occurrences have been documented based on publicly available data.

Tricolored Bat

The TRBA is proposed for listing and has the potential to occur in the PPA. Because the TRBA is not covered under the 2015 PEIS, this section will contain a more detailed analysis of the TRBA. The PPA is on the western edge of the estimated range for the TRBA, which extends approximately to the middle of Kansas but excludes the upper northwest corner of Iowa (BCI 2023b). The species is known to occur in Iowa throughout the year, including during hibernation, spring and fall migrations to and from summer habitat and hibernacula, and the summer maternity season (Janke 2018). During the summer, TRBAs generally roost alone or in small colonies during pup-rearing season in tree cavities, caves, rock crevices, and manufactured structures (BCI 2023b).

During the winter, the TRBA roosts singly or in low numbers in smaller hibernacula that may not be suitable for other bat species, with a preference for hibernating in caves and mines where

temperatures remain at about 50.5 to 52.5 °F and humidity is high (at least 80%; USFWS 2021b). To evaluate the potential for suitable cave habitat for the TRBA within and around the PPA, karst and mine data was considered for Iowa and the surrounding states. Within Iowa, hibernacula for TRBAs and other bat species occurs where underground caves have formed in shallow or exposed limestone (carbonate) bedrock (Dixon 2010, Janke 2018). Carbonate bedrock is present across the southwest corner and eastern portion of Iowa and next to the state along the borders of South Dakota and Nebraska (USGS 2020). The closest shallow carbonate bedrock, where caves could form and be exposed to the surface, is approximately 200 miles east of the PPA in the northeast and southeast corners of the state, along with an isolated area approximately 125 miles west of the PPA in Nebraska (USGS 2020). In addition, exposed bedrock can be present along river corridors. The only documented TRBA hibernacula in Iowa occurs in Floyd, Clayton, Dubuque, Fayette, Jackson, Jones, and Winneshiek counties in or near these karst features based on published research and a census of bat hibernacula in Iowa caves by the Iowa Grotto. The closest of these, in Floyd County, is at least 115 miles east of the Project (Dixon 2010).

As previously noted, mines could also be used as hibernacula by the TRBA. However, due to the low winter temperatures in the PPA (e.g., for Carroll County, the daily winter average is 27.1 °F, the average winter low is 20.2 °F, and the average winter high is 31.9 °F; Weather and Climate 2024b), mine use is likely limited to underground mines where the necessary temperature and humidity levels can develop (Feldhamer and Carter 2007). Common mining within the state of Iowa is surface mining for limestone, sand, gravel, gypsum, and clay (IDALS 2023). Surface mining may expose more deeply buried carbonate bedrock to the surface; however, it is unlikely to be conducive to forming caves that are deep enough or sheltered enough to create the microclimate needed for TRBA hibernation.

TRBAs are also known to use alternate resources for hibernacula, such as concrete culverts, tree hollows, and rock shelters, in more southern, warmer states (Demere et al. 2017, Leivers et al. 2019). Due to low Iowa winter temperatures, it is less likely that many of these smaller types of hibernacula would be sufficiently insulated to maintain warm enough temperatures for TRBA hibernation. However, there is unpublished evidence that bats are using rock crevices or fissures in exposed bedrock along Iowa rivers for hibernacula, which could include TRBA (A. Andress, pers. comm., March 19, 2024). Potential areas include the Missouri River, which is approximately 40 miles west of the Project.

For foraging, the TRBA is known to prefer foraging over water and along forest edges for small insects (USFWS 2024c). Within the PPA, there are 208.4 acres (0.5%) of potentially suitable TRBA habitat, consisting of approximately 12.9 acres of deciduous and evergreen trees and small woodlands (USGS 2021; Table 3.5-1) and 195.5 acres of NWI wetlands (USFWS 2023g, 2024e; Table 3.2-1). In addition, there are six perennial streams, two named intermittent streams, and approximately 115.9 miles of unnamed (primarily intermittent) tributaries in the PPA (see Section 3.2.1 and Appendix E). The available habitat in the PPA is sparse and generally of low quality. Available woodland habitat occurs in small, isolated patches (e.g., see Figure L-3), and there are few instances of perennial streams and wetlands within or adjacent to the

wooded areas that could provide preferred foraging opportunities. Furthermore, the PPA is not known to have caves or rock crevices suitable for TRBAs to use as hibernacula.

While there is sparse winter and summer habitat within the PPA, the TRBA could be present within the PPA during spring and fall migration. Bat migration pathways can include wooded riparian corridors and woodland edges (Limpens and Kapteyn 1991, Verboom and Huitema 1997, Furmankiewicz and Kcuharska 2009). However, some bats may also migrate overland in a straight path, regardless of topography (Samoray et al. 2019, Johnson and Strickland 2004). The TRBA's migration distance has been recorded to be between 27 and 151 miles (USFWS 2021b). Given the TRBA's ability to migrate long distances and over open terrain, the species may fly through the PPA when traveling between larger summer woodland habitat outside of the PPA and winter habitat in eastern Iowa or Nebraska during spring and fall migration.

According to the environmental review conducted by the IDNR for rare species or significant natural communities, there are no records of the TRBA or hibernacula in the PPA (C. Laskowski, pers. comm., October 18, 2023, and March 27, 2024). The nearest USFWS documented occurrence is approximately 11 miles northeast in the Marrowbone Creek North Raccoon River HUC-12 watershed in the USEPA Des Moines Lobe Level IV Ecoregion (Figure L-5; A. Andress, pers. comm., August 25, 2023). However, other records have also documented TRBAs at the two closest wind farms (within 4 to 7 miles) within the same Level IV ecoregion as the PPA, the Steeply Rolling Hills Prairie, although these occurrences were based on Kaleidoscope filtered results and not verified through qualitative analysis (USFWS 2019a).

While there are TRBAs documented to occur in the Level IV Steeply Rolling Hills Prairie Ecoregion, a majority of USFWS-documented occurrences in Iowa occur in the USEPA Level IV ecoregions to the east, including the Des Moines Lobe and the Rolling Loess Prairies ecoregions (Figure L-5; A. Andress, pers. comm., August 25, 2023). These ecoregions have substantially more woodland habitat that provides more suitable TRBA roosting and foraging habitat, with 287,940 and 1,207,577 acres of woodland, respectively (Chapman et al. 2002, USGS 2021).

Comparatively, the Project ecoregion, the Steeply Rolling Loess Prairies, contains approximately 69,581 acres of woodland habitat (USGS 2021). The USFWS documented four occurrences of TRBA in the Steeply Rolling Loess Prairies Ecoregion. All the reported areas contain a large amount of suitable TRBA habitat, such as miles of connected riparian woodlands and large areas of contiguous forested land, within parks, nature preserves, and/or wildlife management areas.

Data from the 2018 bat activity study and the 2021 acoustic presence / probable absence surveys for NLEBs described above were also analyzed for the potential presence of TRBAs. During the 2018 bat activity survey, 132 (2.1%) calls were identified by Kaleidoscope as potential TRBA calls. After qualitative analysis, five (0.08%) calls recorded during the fall migration period were confirmed to belong to TRBAs, with the calls occurring between late August to September. During the 2021 presence / probable absence surveys, the Kaleidoscope

analysis of the data flagged 15 (1.2%) calls as potential TRBA calls (Sichmeller and Parrott 2023). The qualitative analysis of the 2021 calls concluded that none of the calls were from TRBAs. Therefore, acoustic survey results show probable absence of the species within the PPA during the summer. There is a possibility that the TRBA could pass through the PPA during spring migration, although no spring occurrences have been documented based on publicly available data. As mentioned above, the species was confirmed to pass through the PPA seasonally during the fall migration period based on 2018 acoustic surveys. However, the number of TRBAs that passed through the PPA during the fall migration was low.

The low number of occurrences across both migration periods could be due to the distance between the PPA and hibernacula (115 miles from the PPA), leading TRBAs to disperse into closer, more suitable summer habitat in surrounding ecoregions rather than passing through the PPA during the spring migration and vice versa during their fall migration. Furthermore, it should also be noted that TRBA populations have declined in Iowa since the introduction of white-nose syndrome (WNS) in Iowa in 2015 (White-Nose Syndrome Response Team [WNSRT] 2024). These reductions have also been seen for the range-wide TRBA populations since the introduction of WNS to the United States in 2006 (WNSRT 2024), with an estimated population declines of 93% (95% credible interval: 90–100%; Cheng et al. 2021). For these reasons, the proportion of TRBAs that occur in the PPA has likely declined as well.

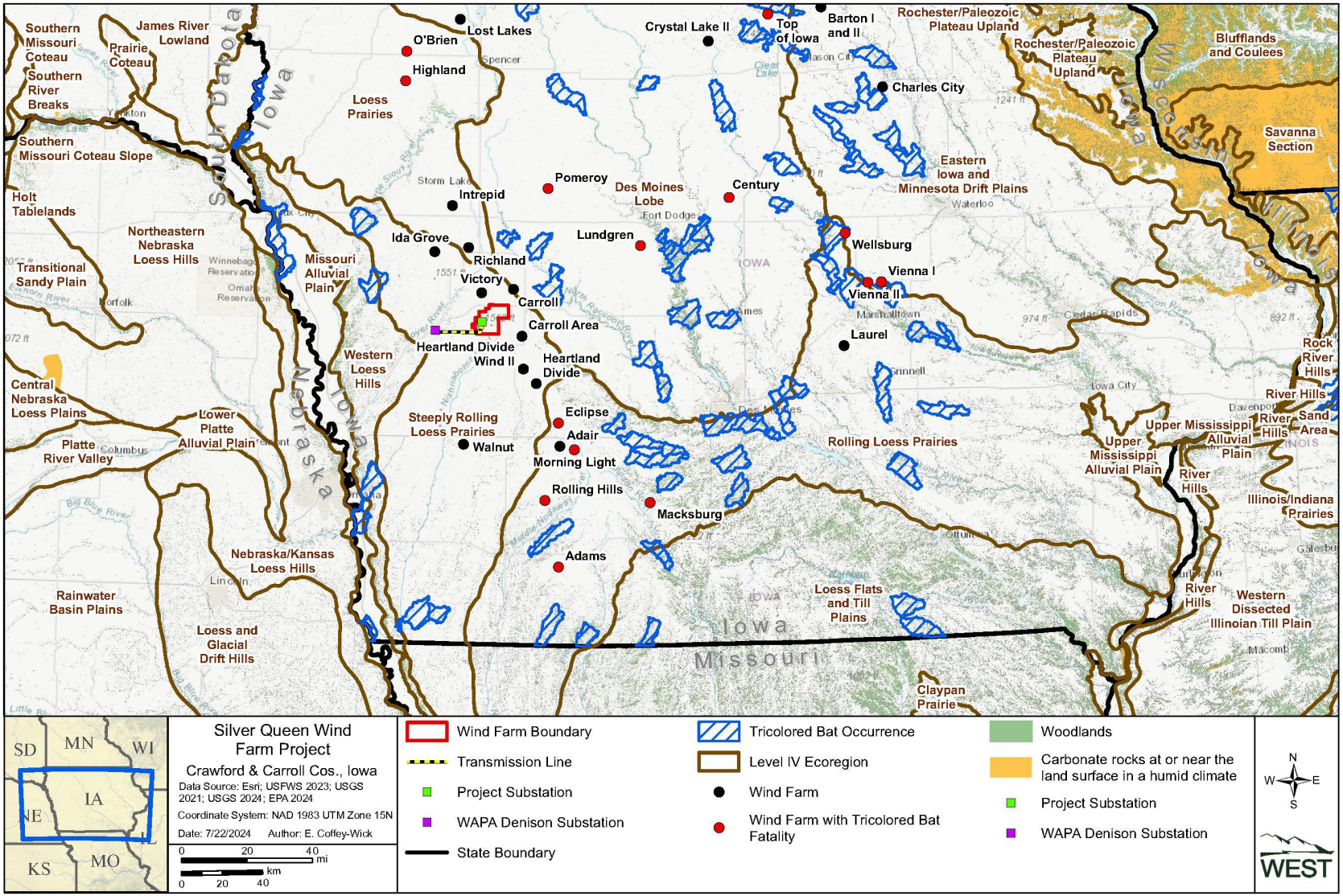

Figure L-5. Documented tricolored bat occurrences at wind energy facilities within the Steeply Rolling Loess Prairies Level IV Ecoregion relative to the PPA, NLCD-mapped woodlands, and other Level IV ecoregions.

Little Brown Bat

The PPA is in the central portion of the estimated range for the LBBA, which extends through most of the Unites States except the south-central portions (USFWS 2023d). The species is known to occur in Iowa throughout the year (Janke 2018). LBBAs hibernate in dense clusters, most frequently in high-humidity caves and mines with relatively stable temperatures above freezing, and often return to the same locations year after year (Fenton and Barclay 1980). During the summer, suitable habitat for the LBBA includes trees, artificial structures, and under rocks (USFWS 2023e). Maternity colonies are frequently found in anthropogenic structures, as well as in cracks, crevices, or under exfoliating bark in large dead trees (Humphrey and Cope 1976, Kunz et al. 1998).

There are known LBBA occurrences in the Upper East Boyer River HUC-12 watershed within the northern portion of the PPA's seven HUC-12 watersheds, as detailed in Section 3.2.1 (Figure L-2; A. Andress, pers. comm., August 25, 2023). This overlapping occurrence area within the PPA contains portions of forested land that can provide suitable habitat for the LBBA. The gen-tie line for the Project also crosses through the East Boyer River HUC-12 watershed west of the PPA's watershed, which also has LBBA occurrence records. However, the southern portion of the East Boyer River HUC-12, where the gen-tie line passes through, contains limited suitable forested habitat for the LBBA (Figure L-3).

Potentially suitable roosting habitat in the PPA includes scattered woodlands and trees, primarily along riparian areas used for foraging and at windbreaks and landscaping on farms, as well as farm buildings such as barns and sheds. The species forages for insects over wetlands, waterways, and along the edges of agricultural fields (Fenton and Barclay 1980). Given the similarities in roosting and foraging habitat, suitable habitat within the PPA for the LBBA is the same as for the TRBA described above.

At the time bat surveys were being conducted for the Project, there were no established USFWS survey protocols specific to the little brown bat. Therefore, Silver Queen relied on the 2021 acoustic presence / probable absence surveys for NLEBs for evidence for the potential presence or absence of LBBAs. The Kaleidoscope analysis of the data flagged 17 (2.0%) calls as potential LBBA calls (Sichmeller and Parrott, 2023). However, the subsequent qualitative analysis concluded that none of the calls were from LBBAs. Based on this evidence, along with sparse habitat, there appears to be a low risk that the species occurs within the PPA during the summer. The species could pass through the PPA as a seasonal migrant in the spring and fall, although no spring or fall occurrences have been documented based on publicly available data.

Monarch Butterfly

The monarch butterfly can be found across North America during the summer months, wherever its host plant, milkweed (*Asclepias* spp.), or other blooming nectar resources are found (USFWS 2020a). Monarch butterflies within Iowa are part of the eastern migratory population (Journey North 2019) that migrate to the state during the spring to find summer breeding grounds and migrate during the fall to return to the species' southern winter habitat

(Monarch Joint Venture 2023b). Trees and shrubs are required for roosting during migration. Monarch butterflies lay eggs on obligate milkweed host plants throughout migration and can produce multiple generations in a single breeding season as a result (Midwest Association of Fish and Wildlife Agencies [MAFWA] 2018, USFWS 2020a). Larvae are obligate milkweed feeders, whereas adults consume the nectar of a variety of flowers in varied habitats: fields and grasslands, roadsides, open areas, wet areas, and urban gardens (MAFWA 2018, Monarch Joint Venture 2023a; U.S. Forest Service 2021, 2023). The PPA contains approximately 798.6 acres (2%) of potentially suitable habitat for the monarch butterfly, including approximately 578.8 acres of hay fields or pastureland, 50.9 acres of upland herbaceous land (USGS 2021; Table 3.5-1), and 168.9 acres of NWI emergent and forested/shrub wetlands (USFWS 2023g, 2024e; Table 3.2-1). Therefore, there is potential for the monarch butterfly to be present within the PPA.

Western Prairie Fringed Orchid

The western prairie fringed orchid is an open habitat species associated with undisturbed, native mesic to wet tallgrass prairies and sedge meadows. This species is often found in prairies dominated by big bluestem (*Andropogon gerardii*) and northern dropseed (*Sporobolus heterolepis*; IDNR 2006b). The western prairie fringed orchid is restricted to the region west of the Mississippi River, and the study area is within the east-central portion of the species' range (USFWS 2023h).

The PPA contains 218.7 acres of potentially suitable habitat for the western prairie fringed orchid, including approximately 50.9 acres of upland herbaceous land (USGS 2021; Table 3.5-1) and 167.8 acres of NWI emergent wetlands (USFWS 2023g, 2024e; Table 3.2-1). However, the habitat in the PPA is highly disturbed due to agricultural activities, with herbaceous plant communities generally found in heavily grazed pasture, along roadsides, and in swales of agricultural fields subjected to traffic from farm machinery such as tractors and combines.

One area with big bluestem, Indiangrass (*Sorghastrum nutans*), and other native tallgrass prairie species was observed during the November 2023 wetland delineation (see Section 3.2); however, no western prairie fringed orchids were observed, and the area occurred along a disturbed roadside and appeared to be planted, making it unlikely to support the species based on past disturbance. While the western prairie fringed orchid has recorded observations in the Project counties, it has not been documented in the PPA (C. Laskowski, pers. comm., October 18, 2023, and March 27, 2024). Given the lack of habitat and no known occurrences, the species is not likely to occur.

STATE-PROTECTED SPECIES

Barn Owl and Northern Harrier

The barn owl (*Tyto alba*) and northern harrier (*Circus hudsonius*) are both state endangered birds that occur in both Carroll and Crawfords counties. These species typically forage in open to semi-open landscapes including agricultural areas, wetlands, and prairies (Audubon

2023a,b). While both barn owls and northern harriers have suitable roosting and nesting habitat within the PPA (12.9 acres and 50.9 ac, respectively), only the northern harrier has been observed during avian use surveys conducted within the PPA (Bay and McDonald 2018, Bay et al.2019a, McDonald and Bay 2021). It therefore possible that barn owls could occur and highly likely that northern harriers would occur at the Project.

The barn owl (*Tyto alba*; state endangered) occurs in both Carroll and Crawford counties. This species is typically found in semi-open habitats such as farmlands and wetlands. However, the species can also be found in forests and cities if open foraging territory, such as open fields or agricultural areas, are nearby (Audubon 2023a). Barn owls primarily roost and nest in tree hollows/cavities and manufactured structures, such as barns and nest boxes (Barn Owl Trust 2023a). The PPA provides potential habitat for roosting, foraging, and nesting. The majority of the PPA contains cropland and other barn owl foraging habitat, along with 12.9 acres of suitable roosting and nesting woodland habitat (USGS 2021; Table 3.5-1). Barn owls were not observed during any of the avian use surveys (Bay and McDonald 2018, Bay et al. 2019a, McDonald and Bay 2021). However, due to the high amount of potential habitat in the PPA, it is possible that barn owls could occur.

While not listed as occurring in Carroll or Crawford counties in the IDNR Natural Areas Inventory, the state-endangered northern harrier (*Circus hudsonius*) was observed during all four avian use surveys (Bay and McDonald 2018, Bay et al.2019a, McDonald and Bay 2021). Northern harriers can be found in open habitats such as fields, wetlands, and prairies, where they will roost, outside of breeding season, and nest on the ground (Audubon 2023b, Hawk Mountain 2023). They primarily forage in open habitats such as cultivated areas (Peregrine Fund 2024) and areas with mixed vegetative cover and avoid areas with short vegetation (Hawk Mountain 2023).

The above-mentioned habitat types can be found within the PPA, providing potential habitat for roosting, foraging, and nesting northern harriers (USFWS 2023g, 2024e, USGS 2021; Tables 3.2-1 and 3.5-1). The PPA contains 50.9 acres of upland herbaceous habitat suitable for nesting cover, which is less than 1% of the PPA. However, this is not preferred nesting habitat for northern harriers since it is within agricultural lands. Agricultural lands face higher levels of disturbance that could cause lower levels of reproductive success for the northern harrier, regardless of the presence of the Project (Slater and Rock 2005). Given limited good quality nesting habitat, the northern harrier may be more likely to use the PPA for foraging and roosting. Given that the species has been observed in the PPA and suitable habitat is present, it is likely that the northern harrier would occur at the Project.

Blanding's and Ornate Box Turtle

The Blanding's turtle (*Emydoidea blandingii*) and the ornate box turtle (*Terrapene ornate*) are both state threatened reptiles that occur have been documented in Carroll and Crawford Counties, respectively. The Blanding's turtle is found in shallow wetlands and areas with slow-moving water and abundant, diverse aquatic vegetation and nests in upland areas with well-

drained sandy soils (IDNR 2009a, USFWS 2023a). While there are 195.5 acres of NWI wetlands in the PPA, the wetlands are fragmented by crop fields and pasture. The ornate box turtle is found in sandy habitats, including sand dunes and prairie grasslands; sandy habitats are important for nesting and overwintering, while prairie grasslands are used the rest of the year. There are no native prairie grasslands known to occur in the PPA, and sandy soil is limited, as noted above. Given the limited amount of undisturbed, good quality habit within the PPA, both the Blanding's turtle and ornate box turtle are not likely to occur at the Project.

The Blanding's turtle (*Emydoidea blandingii*; state threatened) has been documented in Carroll County and the ornate box turtle (*Terrapene ornata*; state threatened) in Crawford County (IDNR 2023f,g).

The Blanding's turtle is found in shallow wetlands and areas with slow-moving water and abundant, diverse aquatic vegetation. It nests in upland areas with well-drained sandy soils (IDNR 2009a, USFWS 2023a). Within the PPA, good quality habitat is limited. While there are 195.5 acres of NWI wetlands in the PPA, the wetlands are fragmented by crop fields and pasture and spread out over less than 1% of the PPA (USFWS 2023g, 2024e). Wetlands primarily occur within or adjacent to crop fields where they are disturbed by crop cultivation and other agricultural activities, while wetlands found in pasture may be used by cattle as a water source. Although the Blanding's turtle has been known to occur in agricultural areas (Refsnider and Linck 2012, Orianne Society 2024, Minnesota DNR 2024), upland areas contain limited opportunities for nesting, with just 0.1% of the PPA (approximately 41 acres) containing well-drained sandy soils (primarily in the eastern portion of the PPA in Carroll County), while a majority of the soil in the PPA classified as silty clay (99.0%). Given the limited amount of undisturbed, good quality habit within the PPA and a lack of nearby documented occurrences, the Blanding's turtle is not likely to occur at the Project.

The ornate box turtle is found in sandy habitats, including sand dunes and prairie grasslands; sandy habitats are important for nesting and overwintering, while prairie grasslands are used the rest of the year. In the absence of tallgrass prairie, ornate box turtles will use shortgrass prairie with some shrub cover (IDNR 2006a). There are no native prairie grasslands known to occur in the PPA, and sandy soil is limited, as noted above. Given the limited amount of undisturbed, good quality habit within the PPA, the ornate box turtle is not likely to occur at the Project.

Creeper and Pistolgrip Mussels

The creeper (*Strophitus undulatus*; state threatened) has been documented in Carroll County (IDNR 2023f,g). The creeper is found in small to medium-sized streams and occasionally large rivers in mud, sand, or gravel (IDNR 2001). As noted in Section 3.2.1, the PPA includes small- and medium-sized perennial streams that could provide potential habitat for the creeper (USFWS 2021; Table 3.2-3), including eight named perennial waterbodies and 115.9 miles of unnamed tributaries. Therefore, there is potential for the creeper to be present at the Project.

The pistolgrip (*Tritogonia verrucosa*; state endangered) has been documented in Carroll County. However, the pistolgrip is found in large rivers with rocky or gravely substrates (Parmalee and Bogan 1998), and this type of habitat is not found in the PPA. Due to the lack of suitable habitat within the PPA, the pistolgrip is not likely to occur.

Byssus Skipper

The Byssus skipper (*Problema byssus*; state threatened) has been documented in Carroll County (IDNR 2023f,g). In the Midwest, the Byssus skipper is generally found in undisturbed tallgrass prairies with concentrations of the species' main foodplants, eastern gamagrass (*Tripsacum dactyloides*) and big bluestem (Shepherd 2005). As discussed in the western prairie fringed orchid narrative above, there are no undisturbed native tallgrass prairies within the PPA, so the Byssus skipper is not likely to occur at the Project.

Bigroot Prickly-Pear

The bigroot prickly-pear (*Opuntia macrorhiza*; state endangered) has been found in Carroll County (IDNR 2023f,g). The bigroot prickly-pear is found in dry grasslands with sandy soils (Wildflower Center 2023). Within the PPA, there are no grasslands with sandy soil; a majority of the soil in the PPA is classified as silty clay (99.0%), with all other soil types composing less than 1% of the PPA (NRCS 2023b). Therefore, the bigroot prickly-pear is not likely to occur at the Project.