

Exhibit K

State-Listed Herpetological Habitat Assessment



Report of Findings

Herpetological Habitat Assessment
Installation of the Amaral Solar PV Solar Facility

254 Putnam Road
Pomfret Center, Connecticut

NDDB Preliminary Assessment No.: 202103657

Prepared By:

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Dennis Quinn of Quinn Ecological, LLC conducted a one-day habitat assessment at the subject property located at 254 Putnam Road in Pomfret Connecticut on August 4th, 2021. This assessment was focused on documenting habitats suitable to support populations of state listed amphibians and reptiles, including but not limited to, the eastern spadefoot (*Scaphiopus holbrookii*), wood turtle (*Glyptemys insculpta*) and spotted turtle (*Clemmys guttata*) as documented in NDDB Preliminary Assessment No.: 202103657. During this habitat assessment, no listed species of amphibian or reptile were encountered.

Results

Eastern Spadefoot (*Scaphiopus holbrookii*)

The Eastern Spadefoot, the only member of the spadefoot family (Scaphiopodidae) east of the Mississippi River, is among the rarest amphibians in the northeastern United States. It is listed as Endangered under Connecticut's Endangered Species Act and designated as Most Important in Connecticut's Wildlife Action Plan for Species of Greatest Conservation Need (CT DEEP 2015). New England populations are scattered and disjunct, and typically found in low elevation river valleys with sandy, well-drained soils. In eastern Connecticut spadefoot locations coincided with Hinckley Soils and elevations below 200 feet with two notable exceptions in the towns of Lisbon and Griswold where elevations are greater than 300 feet (Moran and Button 2011, Klemens 1993, D.

Quinn, observations, 2016). They prefer open sandy habitats with patches of mixed herbaceous/shrub cover and forested edges.

The footprint of the proposed solar facility falls within an 85-acre hayfield, with the post-construction array field covering 11-acres. The hayfield is cut 2-3 times per year. Current research conducted by Ryan *et al.* (*in prep*) and Jansen *et al.* (2001) suggests that eastern spadefoots avoid densely vegetated grassy habitats, such as hayfield areas, because the dense root systems prohibit burrow excavation. Spadefoots prefer to inhabit and burrow in open sandy areas that are sparsely vegetated with herbaceous grasses and low-growing clusters of shrubs and on forested habitat edges (Ryan *et al.* (*in prep*) and Jansen *et al.* 2001). Due to the absence of suitable upland habitat and breeding wetlands it is unlikely spadefoots occur on the subject property. No further surveys or mitigation are recommended for this species.

Wood Turtle (*Glyptemys insculpta*)

The wood turtle is widely distributed in Connecticut. It occurs at both higher and lower elevations in the State. The core distribution of the wood turtle falls within the eastern and western uplands, where sustainable populations are associated with high quality rivers and streams and their associated riparian and upland habitats (Klemens 1993 and Klemens *et al.*, *in prep*).

Wood turtles have large home ranges centered around small rivers and larger-order streams and their riparian zones. Mosaics of habitats are utilized seasonally, including floodplain forests, agricultural lands and early successional habitats. Urbanization surrounding streams supporting wood turtle populations often lead to declines in population numbers and overall population viability, because they fragment habitats used seasonally which leads to increases in turtle mortality. The wood turtle is listed as Special Concern under Connecticut's Endangered Species Act and designated as Very Important in Connecticut's Wildlife Action Plan for Species of Greatest Conservation Need (CT DEEP 2015).

To help guide conservation and management decisions in Connecticut a focus on “management zones” as recommended by the Northeast Wood Turtle Working Group in Status and Conservation of the Wood Turtle in the Northeastern United States (Jones and Willey 2015) has been adopted. Management Zones include – (Zone 1) Riverine (instream); (Zone 2):300 feet from the edges of the river primarily encompassing the floodplain habitat; and (Zone 3): 1,000 feet extending beyond the boundary of Zone 2 primarily encompassing upland habitats. To ensure survivorship of wood turtle populations reducing impacts, such as fragmentation and road mortality, and maintaining ecological connectivity in conservation zones is critical.

Although Bark Meadow Brook may support wood turtles, the brook itself does not contain prime in-stream habitat or upland habitat to support a large populations of wood turtles. The brook is relatively shallow, contains few undercut banks and root tangles for hibernating turtles and is surrounded by hayfields on both sides, not the preferred mosaic of open and closed canopy floodplain habitats. Although wood turtles do use hayfields adjacent to streams as habitat, these areas often are in conflict resulting in severe injury or death to turtles during harvesting activities

(Erb and Jones, 2011). Although the proposed solar field will avoid impacts to the stream (Zone 1) itself, there will be an impact of 100-ft within the Zone 2 – 300-foot conservation buffer. These impacts, however, will be similar to the current impacts wood turtles may be experiencing at this site as a result of harvesting hay. Impacts from the solar installation within the Zone 2 – 300-foot conservation buffer can be partially mitigated with mowing maintenance schedules and methodologies. No nesting habitat for wood turtles was observed in or around the proposed solar facility. Although no wood turtles were observed during the habitat assessment and habitats identified were marginal, species protection measures during construction activities are recommended for the wood turtle.

Spotted Turtle (*Clemmys guttata*)

The core distribution of the spotted turtle falls within lowland (below 500') areas of the state with concentrations in the central CT lowlands (including the traprock ridges), along the coast, and in eastern and southeastern CT. Individual turtles in sustainable populations seasonally move among a mosaic of wetland and upland habitats to fulfill ecological requirements. Due to a reliance on multiple habitat types and risk of mortality associated with movement among these habitats, populations are highly vulnerable to the impacts of development and fragmentation. Spotted turtles are listed as Special Concern under Connecticut's Endangered Species Act and designated as Very Important in Connecticut's Wildlife Action Plan for Species of Greatest Conservation Need (CT DEEP 2015).

Although some marginal habitat occurs for the spotted turtle in the northeastern portion of the subject property, no wetland, upland, or nesting habitats for this species occurs within the footprint of the proposed solar facility. No impacts to spotted turtles or their habitats are anticipated from the construction of the proposed solar facility. To air on the side of caution, species protection measures should be implemented for the spotted turtle during construction.

Construction Species Protection Measures

To reduce impacts to turtles during the construction phase of the proposed solar facility the following species protection measures are recommended.

1. Isolation Measures

a. Installation of exclusionary fencing (i.e., contractor grade silt fencing), should be installed as a barrier to migrating/dispersing herpetofauna.

b. The intent of the barrier is to isolate the majority of the work zone from foraging/migrating/dispersing herpetofauna. Oftentimes complete isolation of a work zone is not feasible due to accessibility needs. In these circumstances all openings in the isolation barrier, used during the workday for accessibility, should be closed with temporary silt fencing backed with hay bales at the completion of each day.

c. The fencing should consist of non-reinforced conventional erosion control woven fabric, installed approximately six inches below surface grade and staked at seven to ten-foot intervals using four-foot oak stakes or an approved equivalent. In areas where the silt fence cannot be buried, the fencing should be placed with the unburied flap facing away from the construction area and covered with six inches of crushed stone. The Contractor is responsible for daily inspections of the fencing for tears or breaches in the fabric and accumulation levels of sediment, particularly following storm events of 0.25 inch or greater. All compromised areas of silt fence must immediately be repaired. The Environmental monitor should follow-up with these daily inspections on a weekly basis. The extent of the barrier fencing should be as shown on the site plans. The Contractor should have available additional barrier fencing should field conditions warrant extending the fencing as directed by the environmental monitor.

d. No equipment, vehicles or construction materials should be stored outside of the exclusionary barrier fencing.

e. All silt fencing should be removed after the permanent site barrier is constructed.

2. Contractor Education

a. Prior to work on site, the Contractor shall attend an educational session at the preconstruction meeting with a qualified herpetologist. This orientation and educational session will consist of an introductory meeting providing photos of herpetofauna that may be encountered during construction activities, including wood and spotted turtles.

b. The education session will also focus on means to discriminate between the species of concern and other native species to avoid unnecessary “false alarms”. Encounters with all species will be documented by the environmental monitor.

c. The Contractor will be provided with cell phone and email contacts for the herpetologist to immediately report any encounters with listed species, or other herpetofauna species. Educational poster materials will be provided and must be displayed on the job site to maintain worker awareness as the project progresses.

3. Reporting

a. Following completion of the construction project, a summary report to the CTDEEP documenting the monitoring and maintenance of the barrier fence and erosion control measures should be completed by the herpetologist.

b. Any observations of state listed species will be reported to CTDEEP by the qualified herpetologist with photo-documentation (if possible) and with specific information on the location and disposition of the animal.

Literature Cited

CT DEEP 2015. Connecticut Species of Greatest Conservation Need: Wildlife Action Plan. State of Connecticut Department of Environmental Protection, Bureau of Natural Resources.

Erb, L. and M.T. Jones. 2011. Can Turtle Mortality be Reduced in Managed Fields? *Northeastern Naturalist* 18(4):489-496.

Jansen, K. P., A. P. Summers, and P. R. Delis. 2001. Spadefoot toads (*Scaphiopus holbrookii holbrookii*) in an urban landscape: effects of nonnatural substrates on burrowing in adults and juveniles. *Journal of Herpetology* 35:141–145.

Jones, M.T. and L.L. Willey. 2015. *Status and Conservation of the Wood Turtle in the Northeastern United States*. Northeast Wood Turtle Working Group.

Klemens, M. W. 1993. Amphibians and reptiles of Connecticut and adjacent regions. State Geological and Natural History Survey of Connecticut, Bulletin No. 112. Connecticut Department of Environmental Protection, USA.

Klemens, M.W., H.J. Gruner, D.P. Quinn and E. R. Davison. *In prep. Conservation of Amphibians and Reptiles in Connecticut*. State Geological and Natural History Survey of Connecticut Bulletin.

Moran, M., and C. E. Button. (2011). A GIS model for identifying eastern spadefoot toad (*Scaphiopus holbrookii*) habitat in eastern Connecticut. *Applied Geography* 31 (2011) 980-989.

Ryan, K. J., D. P. Quinn, and A. J. K. Calhoun. (In Prep.) Movement Patterns and Terrestrial Habitat Selection of Eastern Spadefoots (*Scaphiopus holbrookii*) at the Northern Limit of Their Range.

Timm, B. C., K. McGarigal, and R. P. Cook. (2014). Upland movement patterns and habitat selection of adult Eastern Spadefoots (*Scaphiopus holbrookii*) at Cape Cod National Seashore. *Journal of Herpetology* 48:84–97.