FirstEnergy

76 South Main Street
Akron, Ohio 44308

May 7, 2018

Mr. John Kessler
Office of Real Estate
Ohio Department of Natural Resources
2045 Morse Road, Building E-2
Columbus, Ohio 43229

Subject: State-Listed Threatened and Endangered Species Consultation
ATSI Broadview 138 kV Transmission Line Project; Clark County, Ohio
ODNR Project 16-901

Dear Mr. Kessler:

American Transmission Systems, Inc. (ATSI), a FirstEnergy company, is soliciting the Ohio Department of Natural Resources (ODNR) for concurrence regarding habitat surveys and construction planning proposed to avoid impacts to state-listed threatened and endangered species along its East Springfield-Tangy 138kV Loop to Broadview Substation Project (Project). This Project involves construction of approximately 5.07 miles of new overhead electric transmission line from the proposed expansion of the existing Broadview substation, east to connect to the existing East Springfield-Tangy 138 kV line. A consultation request was submitted to the ODNR on December 2, 2016. Since our initial consultation with your agency, route changes have occurred along the Project to accommodate landowner requests. Attachment 1 provides a project overview map on aerial photography, and identifies areas where the route has been adjusted.

A response letter was received from the ODNR dated January 27, 2017 (Attachment 2). The ODNR indicated that the Project is within the range of the Indiana bat (*Myotis sodalis*), Iowa darter (*Etheostoma exile*), tonguetied minnow (*Exoglossum laurae*), upland sandpiper (*Bartramia longicauda*), and least bittern (*Ixobrychus exilis*). The ODNR also indicated that there are records of spotted turtle (*Clemmys guttata*), Kirtland's snake (*Clonophis kirtlandii*), and eastern massasauga (*Sistrurus catenatus*) within the vicinity of the Project. In addition, the ODNR stated the Project should avoid impact on listed and non-listed freshwater native mussels.

Indiana bat

ATSI will adhere to the ODNR and USFWS recommended tree clearing for any trees greater than three inches diameter at breast height (dbh) from October 1 through March 31. Therefore, impacts to the Indiana bat are not anticipated.

Iowa darter and tonguetied minnow

The Project does not require any permanent fill within streams. If construction access across streams becomes necessary, timber matting or other temporary bridge structures would be used to avoid any impacts below the ordinary high-water mark and no in-water work will occur. Therefore, impacts to the Iowa darter, tonguetied minnow and freshwater native mussels are not anticipated.

Upland Sandpiper

According to the Conservation Plan for the Upland Sandpiper (*Bartramia longicauda*). Version 1.1. (Manomet Center for Conservation Sciences)[1], nesting upland sandpipers are restricted primarily to extensive, open tracts of short grassland habitat ideally exceeding 200 acres. Upland Sandpipers use grassy areas of low vegetation height for feeding and brood rearing which may include actively grazed pastures, recently burned fields, harvested crops, and recently hayed sites.

All of the non-forested areas located along the route consist of land used for agricultural purposes (e.g., cropland, animal pastures, etc.). Although this may qualify as potential brooding and rearing habitat for the upland sandpiper, no adverse effect to this species is anticipated due the prevalence and availability of this type of habitat throughout southwestern Ohio which includes lands directly adjacent to the narrow work limits necessary for the proposed Project..

Least Bittern

According to the Cornell Lab of Ornithology's Birds of North America[2], suitable habitats for the least bittern include fresh and brackish water marshes with tall, dense emergent vegetation and clumps of woody plants over deep water.

There are no areas of emergent marsh with dense emergent vegetation associated with deep water located along the route. Emergent wetlands located along the route are limited to shallow areas located along stream corridors. Therefore, suitable habitat for the least bittern is not located along the Project route and no adverse effect to this species is anticipated.

Listed Reptiles

The January 27, 2017 ODNR response letter requested that a habitat suitability survey be conducted for the eastern massasauga, Kirtland's snake, and spotted turtle. On behalf of ATSI, Jeffrey Davis, an ODNR approved herpetologist, conducted a habitat survey for each of these species in February 2017 for the Project route that was included in the initial data request to ODNR (Attachment 2a-2c). Due to changes in the original route which occurred due to landowner preferences, an additional habitat survey was conducted in September 2017 for these species (Attachment 2d)

February 2017 Habitat Survey

Based on the results of the February 2017 habitat survey for the spotted turtle, suitable habitat was identified at two sites south of Mechanicsburg Road (see Attachment 2a, Figure 2) and therefore, a presence-absence survey was recommended for the spotted turtle at this location. Based on the results of the February 2017 habitat survey for the eastern massasauga and Kirtland's snake, a presence/absence survey for these species

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[1] http://www.whsrn.org/sites/default/files/file/Upland_Sandpiper_Conservation_Plan_v1.1_10_02-28.pdf

[2] Poole, Alan F., Peter E. Lowther, James P. Gibbs, F. A. Reid and Scott M. Melvin. (2009). Least Bittern (Ixobrychus exilis), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: https://birdsna.org/Species-Account/bna/species/leabit
DOI: 10.2173/bna.17

was recommended in the field south of Buck Creek and west of Baldwin Lane in the portion of the field that is not tilled (under and around the existing transmission line tower) and on the state property immediately adjacent to the existing transmission line tower (see Attachments 2b and 2c, Figures 3 and 3, respectively).

September 2017 Habitat Survey

Based on the results of the habitat survey conducted in September 2017 (Attachment 2d), the ditch along the western margin of the Davis field located east of Old Mechanicsburg Road was found to provide excellent Spotted Turtle habitat (Attachment 2d, Figure 4). Further, there is an area at the south edge of the Davis field that could potentially be used by eastern massasaugas due to known occurrences at Prairie Road Fen which is located to the south of the Davis field (Attachment 2d, Figure 4).

Presence/Absence Surveys

Presence-absence surveys for eastern massasauga and Kirtland's snake were subsequently conducted by Jeffery Davis within the area identified during the February 2017 habitat survey as exhibiting habitat characteristics for these species. These surveys concluded in October 2017 and resulted in neither of these species being encountered (see Attachments 3a and 3b). A presence-absence survey was not conducted for the spotted turtle.

Listed Reptile Avoidance Measures

ATSI proposes to install construction fencing along the stream identified as potentially providing habitat for spotted turtles during the September 2017 Habitat Survey to prevent turtles that may be residing in the stream from entering the construction area. If it is determined that the stream will need to be crossed during construction activities, then an ODNR-approved herpetologist will be on site to monitor the area for spotted turtles and remove turtles from the construction area accordingly. An email dated April 3, 2018 from Mr. Nathan Reardon of the ODNR Division of Wildlife concurring with this approach is included in Attachment 4. Potential habitat for the spotted turtle identified during the February 2017 habitat surveys is no longer within the limits of the Project given landowner-requested changes in the route alignment. ATSI is proposing work within the area at the southern edge of the Davis field and in the area to east of the Davis field where eastern massasaugas may potentially occur either in the winter months when temperatures aren't conducive to eastern massasauga activity or having an approved herpetologist present during construction activities if temperatures are conducive to snake activity to ensure snakes do not make their way onto the access route during construction activities. This action will also be employed to support temporary construction access from Old Mechanicsburg Road across an upland field to install guying anchors associated with a planned angle structure. Pending landowner approvals, this approach will avoid an equipment crossing of the adjacent ditch referenced previously as potential Spotted Turtle habitat (Attachment 1, Figure 1-10). An email dated April 25, 2018 stating Mr. Davis' concurrence with this approach is included in Attachment 4.

Please review the attached reports and provide concurrence that the proposed approach for construction of the East Springfield – Tangy 138 kV Loop to Broadview Substation Transmission Line Project will not adversely affect state-listed species.

If you have any questions or require additional information, please contact me at (330) 315-6781 or aruggiero@firstenergycorp.com.

Sincerely,

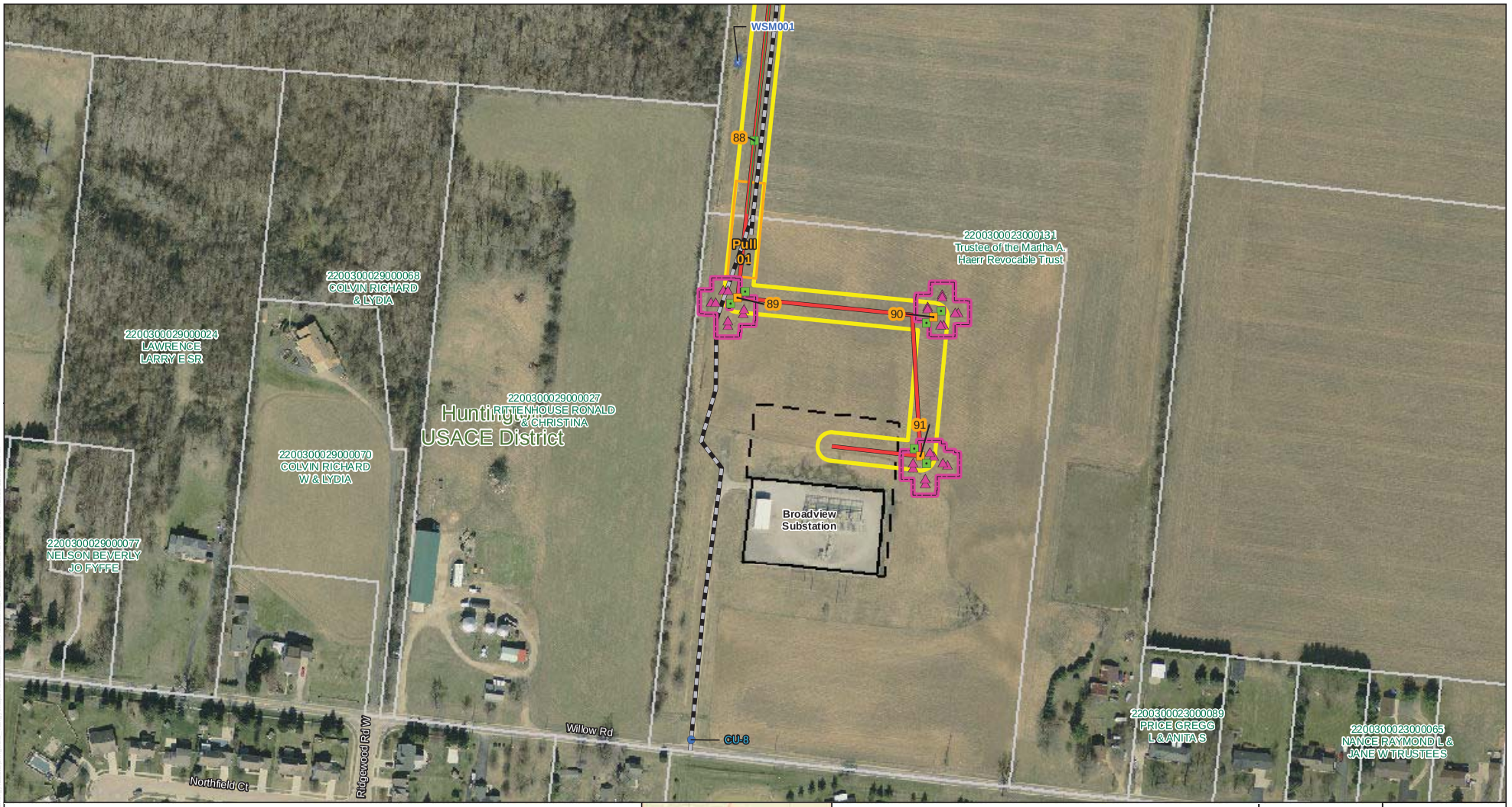
Auggie Ruggiero
Senior Scientist

Attachments:

Attachment 1: Project Overview Map
Attachment 2: Habitat Survey Reports
Attachment 2a: A Habitat Survey for the Spotted Turtle along the Preferred and Alternate Routes of the East Springfield-Tangy line in Clark County, Ohio (February 2017)
Attachment 2b: A Habitat Survey for the Massasauga Rattlesnake along the Preferred and Alternate Routes of the East Springfield-Tangy line in Clark County, Ohio (February 2017)
Attachment 2c: A Habitat Survey for the Kirtland's Snake along the Preferred and Alternate Routes of the East Springfield-Tangy line in Clark County, Ohio (February 2017)
Attachment 2d: Site Visit to the Agricultural Field South and East of Old Mechanicsburg Road in Clark County, Ohio (September 2017)
Attachment 3: Presence – Absence Survey Reports
Attachment 3a: A Presence – Absence Survey for the Massasauga Rattlesnake along the East Springfield-Tangy Transmission Lines in Clark County, Ohio (October 2017)
Attachment 3b: A Presence – Absence Survey for Kirtland's Snake along the East Springfield-Tangy Transmission Lines in Clark County, Ohio (October 2017)
Attachment 4: Email correspondence from ODNR and Mr. Jeffery Davis

Attachment 1

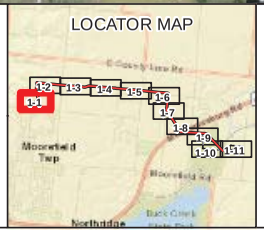
Project Overview Map



LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
- New Wood Pole
- Access Point
- Guy Anchor
- Proposed Route
- Access Road
- Existing Broadview Substation Fenceline
- Proposed Substation Expansion
- Guy Anchor Workspace
- Pulling Pad
- Guard Location
- Railway
- Delineated Wetland
- Delineated Pond
- Delineated Stream
- Floodplain
- Impacted Parcel
- 60ft. ROW
- 401 WQC Ineligible NWP Area
- Access Prohibited
- Potential Eastern Massasauga

LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

0 150 300 600

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East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-1
PRELIMINARY ACCESS MAP

PN: 671817	DATE: 5/4/2018
CREATED BY: DH	ch2m
REVIEWED BY: KF	

LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
- New Wood Pole
- Access Point
- Guy Anchor
- Proposed Route
- Access Road
- Existing Broadview Substation Fenceline
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- Floodplain
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- 401 WQC Ineligible NWP Area
- Access Prohibited
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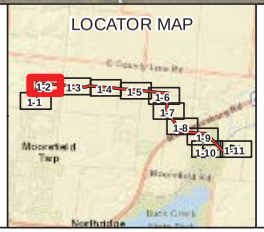
LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

0 150 300 600

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East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-2
PRELIMINARY ACCESS MAP

PN: 671817	DATE: 5/4/2018
CREATED BY: DH	ch2m
REVIEWED BY: KF	

LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
- New Wood Pole
- Access Point
- Guy Anchor
- Proposed Route
- Access Road
- Existing Broadview Substation Fenceline
- Proposed Substation Expansion
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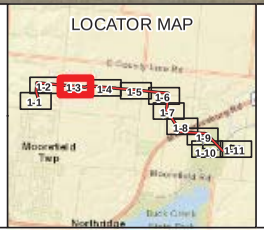
- Delineated Wetland
- Delineated Pond
- Delineated Stream
- Floodplain
- Impacted Parcel
- 60ft. ROW
- 401 WQC Ineligible NWP Area
- Access Prohibited
- Potential Eastern Massasauga



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

0 150 300 600

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East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-3
PRELIMINARY ACCESS MAP

PN: 671817	DATE: 5/4/2018
CREATED BY: DH	ch2m
REVIEWED BY: KF	

LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
- New Wood Pole
- Access Point
- Guy Anchor
- Proposed Route
- Access Road
- Existing Broadview Substation Fenceline
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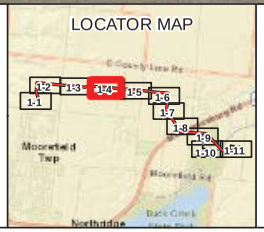
- Delineated Stream
- Floodplain
- Impacted Parcel
- 60ft. ROW
- 401 WQC Ineligible NWP Area
- Access Prohibited
- Potential Eastern Massasauga

LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

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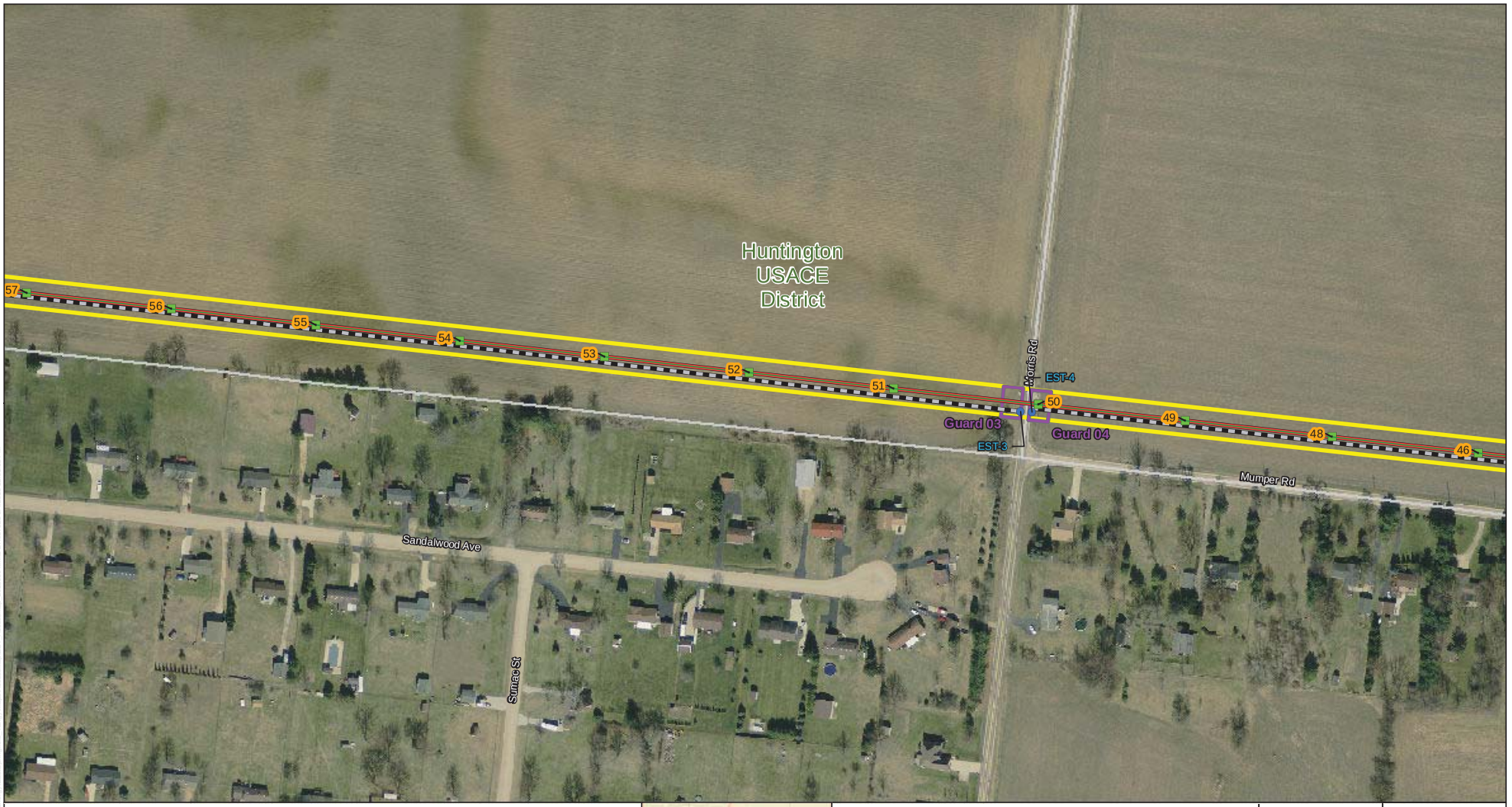
East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-4
PRELIMINARY ACCESS MAP

PN: 671817	DATE: 5/4/2018
CREATED BY: DH	ch2m
REVIEWED BY: KF	



LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
- New Wood Pole
- Access Point
- Guy Anchor
- Proposed Route
- Access Road
- Existing Broadview Substation Fenceline
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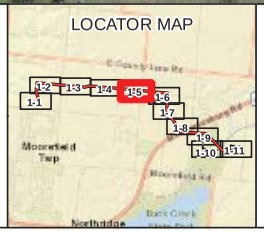
LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

0 150 300 600

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East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-5
PRELIMINARY ACCESS MAP

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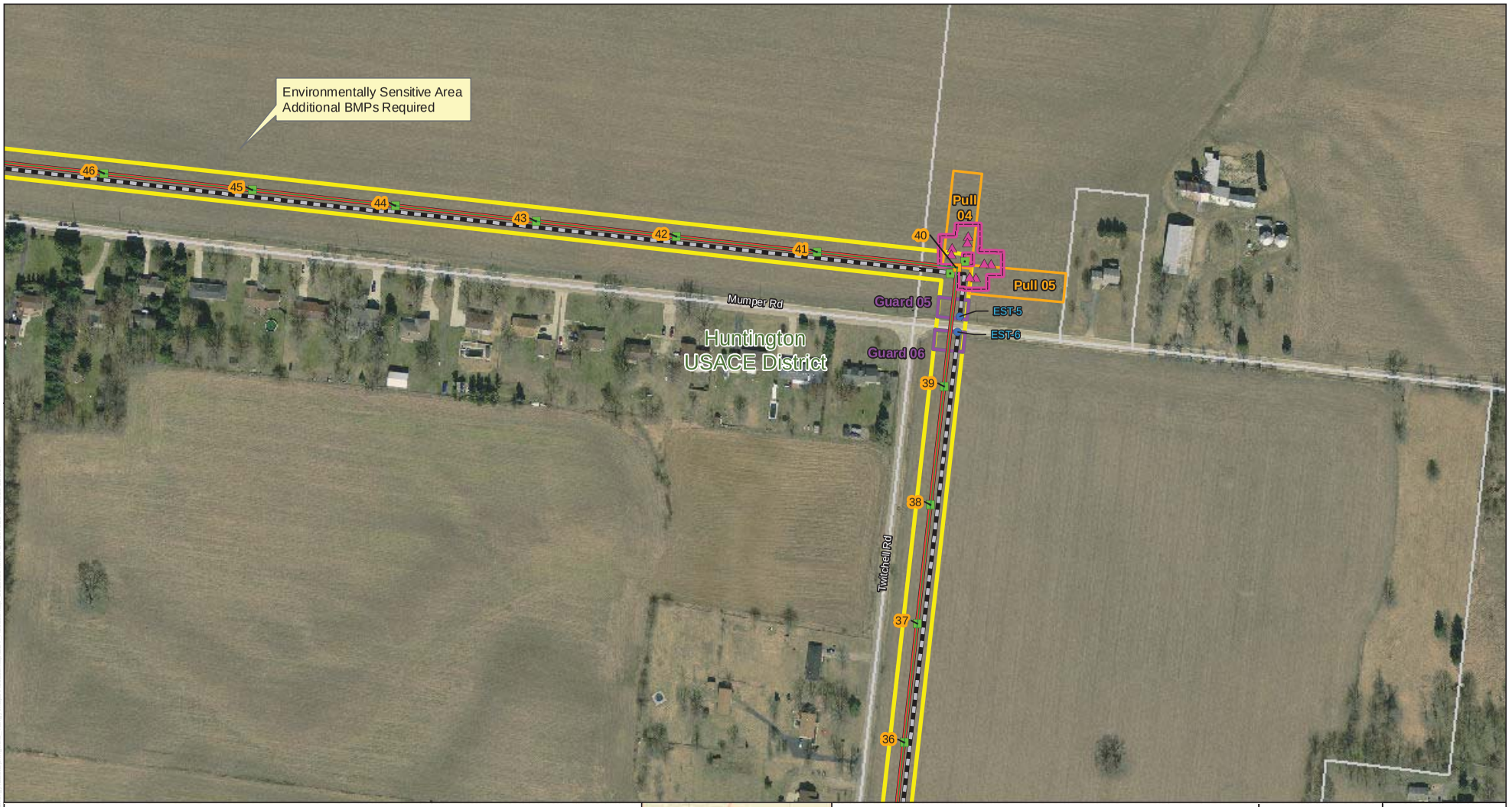
CREATED BY: DH	ch2m
REVIEWED BY: KF	



LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
- New Wood Pole
- Access Point
- Guy Anchor
- Proposed Route
- Access Road
- Existing Broadview Substation Fenceline
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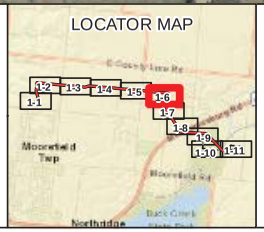
- Delineated Pond
- Delineated Stream
- Floodplain
- Impacted Parcel
- 60ft. ROW
- 401 WQC Ineligible NWP Area
- Access Prohibited
- Potential Eastern Massasauga

LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

0 150 300 600

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East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-6
PRELIMINARY ACCESS MAP

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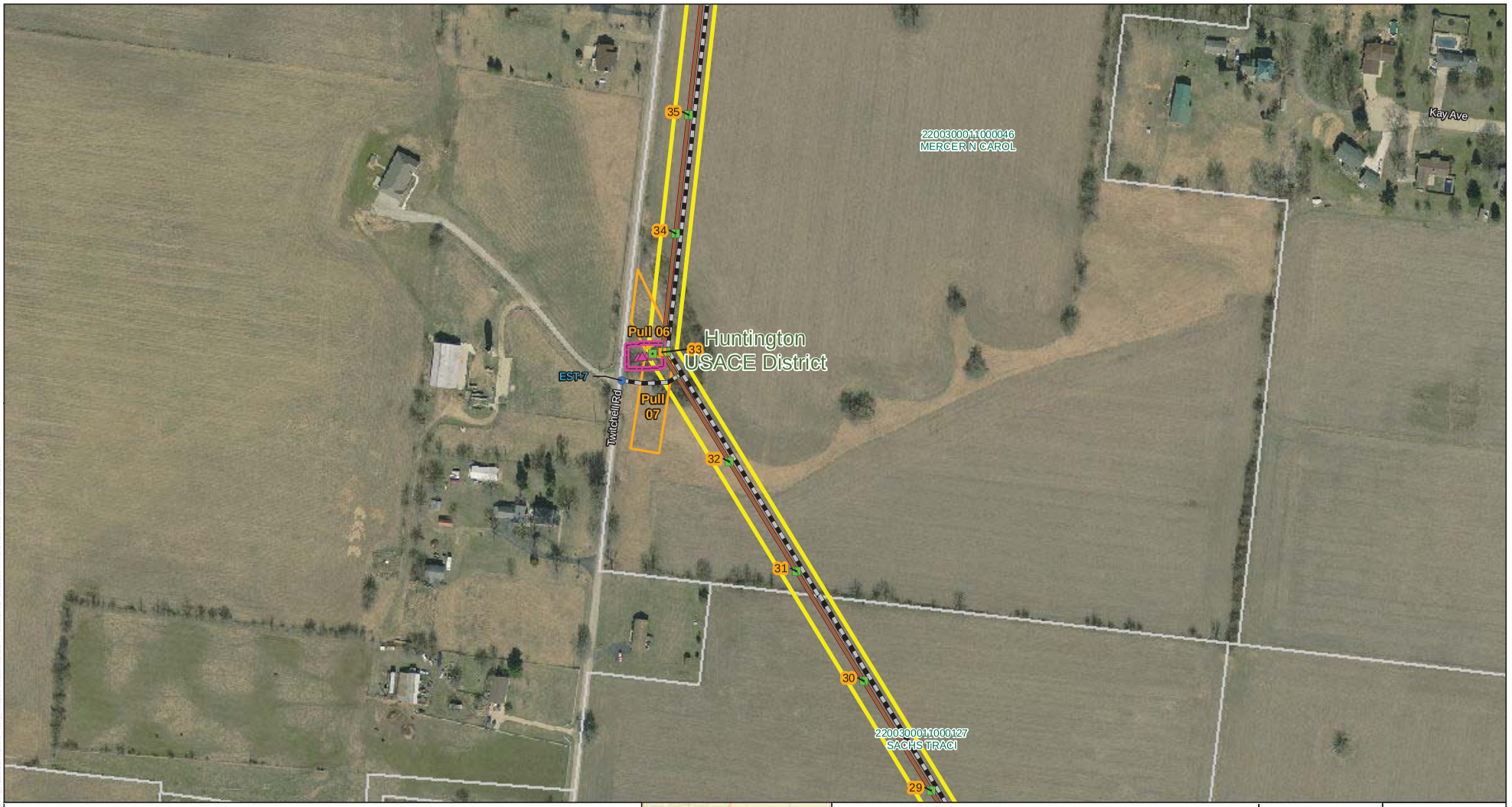
CREATED BY: DH	ch2m
REVIEWED BY: KF	



LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
- New Wood Pole
- Access Point
- Guy Anchor
- Proposed Route
- Access Road
- Existing Broadview Substation Fenceline
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- 401 WQC Ineligible NWP Area
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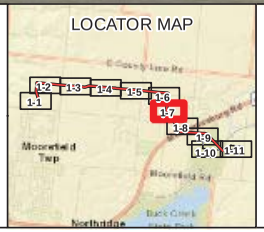
LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

0 150 300 600

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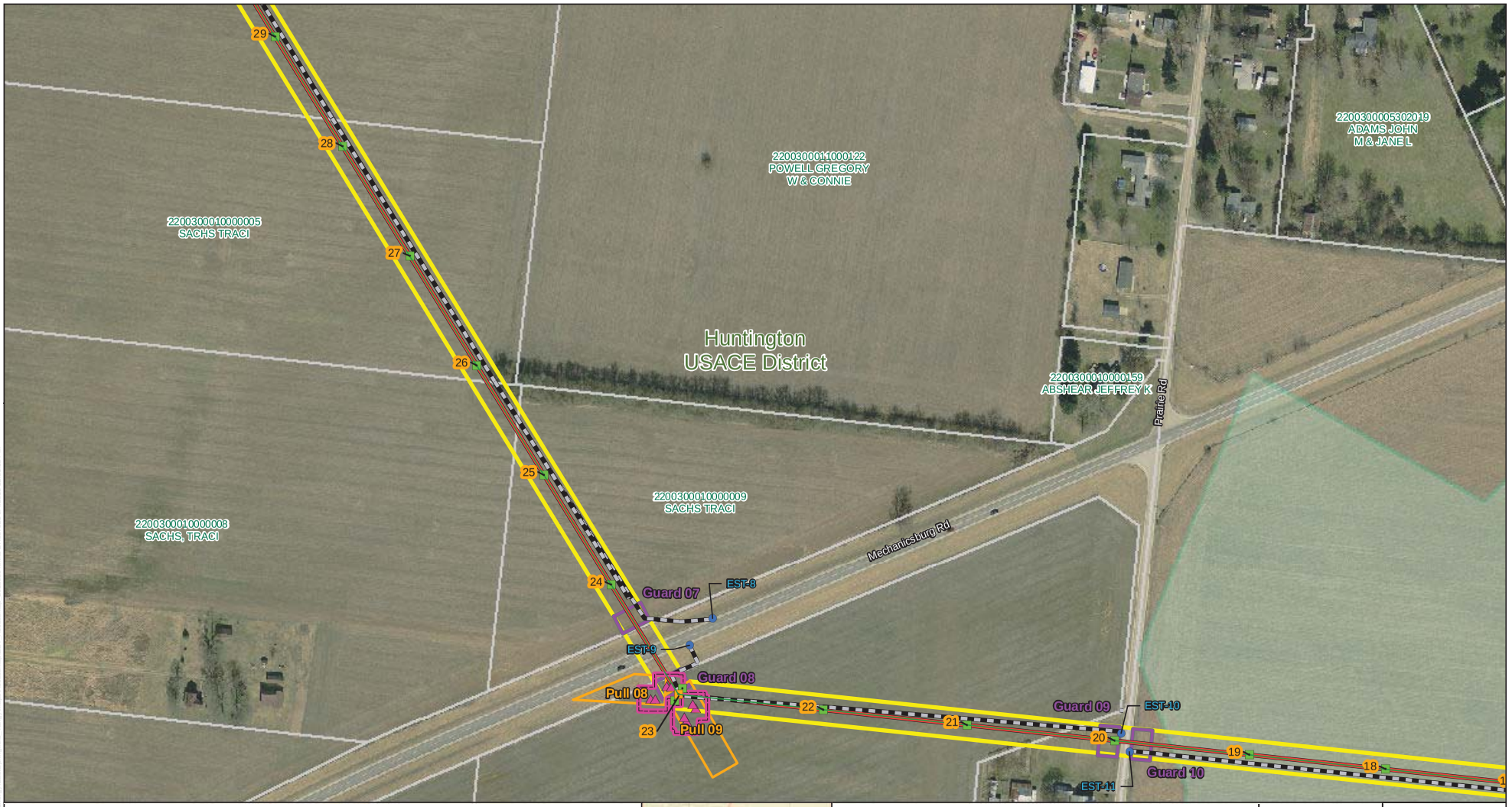
East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-7
PRELIMINARY ACCESS MAP

PN: 671817	DATE: 5/4/2018
CREATED BY: DH	ch2m
REVIEWED BY: KF	



LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
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- Access Point
- Guy Anchor
- Proposed Route
- Access Road
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- 60ft. ROW
- 401 WQC Ineligible NWP Area
- Access Prohibited
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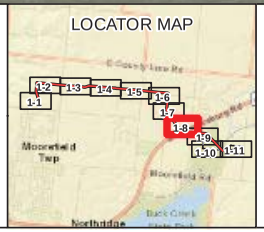
LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

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East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-8
PRELIMINARY ACCESS MAP

PN: 671817	DATE: 5/4/2018
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LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
- New Wood Pole
- Access Point
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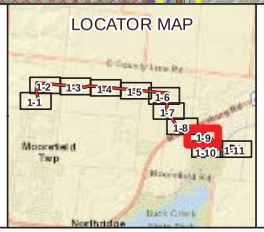
LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

0 150 300 600

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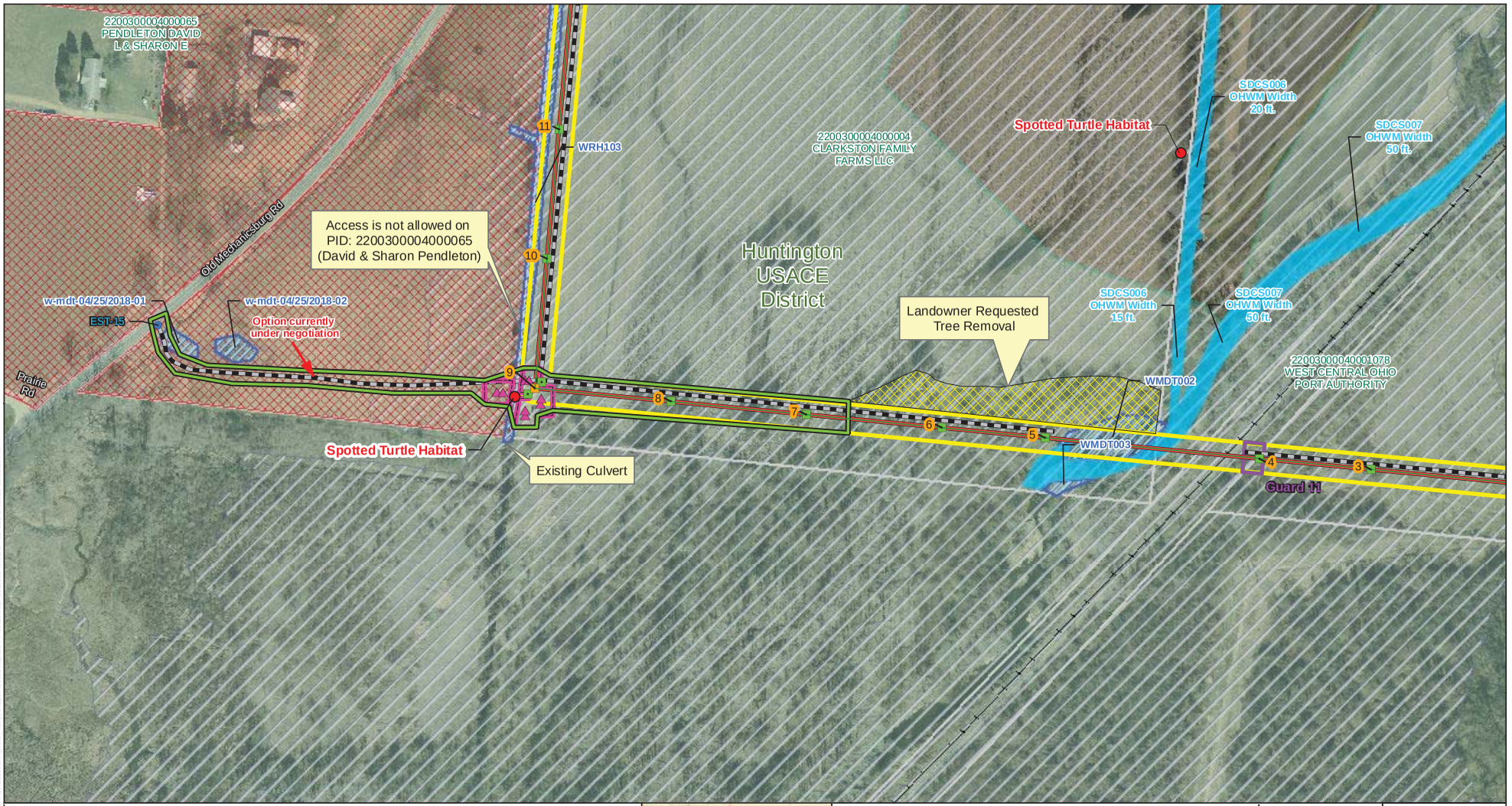
East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-9
PRELIMINARY ACCESS MAP

PN: 671817	DATE: 5/4/2018
CREATED BY: DH	ch2m
REVIEWED BY: KF	



LEGEND:

- Existing Structure
- C/L Hub
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- New Wood Pole
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- Delineated Stream
- Floodplain
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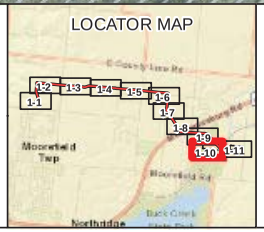
- 60ft. ROW
- 401 WQC Ineligible NWP Area
- Access Prohibited
- Potential Eastern Massasauga

LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

0 150 300 600

SCALE IN FEET

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East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-10
PRELIMINARY ACCESS MAP

PN: 671817	DATE: 5/4/2018
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REVIEWED BY: KF	

LEGEND:

- Existing Structure
- C/L Hub
- New Steel Pole
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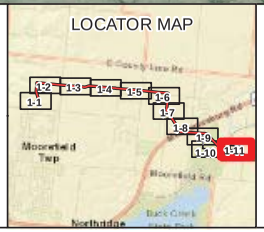
LOCATOR MAP



BASE MAP SOURCE:

Statewide Ohio Imagery Program, 2014

0 150 300 600

SCALE IN FEET

N

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East Springfield-Tangy 138 kV Loop to Broadview Substation

FIGURE 1-11
PRELIMINARY ACCESS MAP

PN: 671817	DATE: 5/4/2018
CREATED BY: DH	ch2m
REVIEWED BY: KF	

Attachment 2

HABITAT SURVEY REPORTS

Attachment 2A

Report: A Habitat Survey for the Spotted Turtle along the Preferred and Alternate Routes of the East Springfield-Tangy line in Clark County, Ohio (February 2017)

Final Report: A Habitat Survey for the Spotted Turtle along the Preferred and Alternate Routes of the East Springfield-Tangy line in Clark County, Ohio.

Submitted to:
Kristin S. Susick
Supervisor, Energy Delivery Support
Environmental Department
First Energy Corp.

28 February 2017

Jeffrey G. Davis (ODNR Approved Herpetologist)
625 Crescent Road
Hamilton, Ohio 45013
E-mail: ohiofrogs@gmail.com
(513) 470-8748 (cell)

Introduction

This report includes the results of a Habitat Survey for the Spotted Turtle (*Clemmys guttata*; Figure 1) along the preferred and alternate routes for a proposed transmission line in Clark County, Ohio. The Habitat Survey was requested by First Energy Corp.

1.0 Subject Sites

Upon the completion of a desktop survey in which potentially suitable habitat was identified from aerial photographs and a museum and literature search, four sites offering potential habitat were identified along the eastern end of a proposed transmission line route (preferred and alternate) in Moorefield Township, Clark County, Ohio (Figure 2).

1.1 Site 1

The stream at this site (Figure 3) flows from the north under Route 4, past the transmission line's "alternate route" at 40.00904°N -83.70298°W, then continues south under Old Mechanicsburg Road to Buck Creek. Near Buck Creek it crosses under the transmission line's "preferred route" (see Section 1.2).

1.2 Site 2

This is the same stream as the one described in Section 1.1 above. It flows under the transmission line's "preferred route" at 40.00084°N -83.70398°W, approximately 800 meters south of Old Mechanicsburg Road and some 115 meters upstream of its confluence with Buck Creek.

1.3 Site 3

This stream is crossed by the alternate route at 40.00931°N -83.69894°W, approximately 140 meters southeast of State Route 4.

1.4 Site 4

The alternate route crosses this stream at 40.00773°N -83.69594°W, approximately 400 meters south of State Route 4.

2.0 Spotted Turtle Life History

The Spotted Turtle is a small freshwater species that inhabits shallow wetlands in the East Coast-Great Lakes Region. Its habitats are usually clean shallow water with a mud bottom and ample aquatic and emergent vegetation (i.e. bogs, fens, wet prairies, vernal pools, and even roadside ditches). These wetlands must have an open canopy that allows the turtles to bask in full sun. Spotted Turtles become active very early in the spring and can be visually seen basking on logs or emergent clumps of grass and sedges. When disturbed they will take to the water and bury themselves in the substrate. These turtles are also quite terrestrial. Research has suggested over 60% of their time is found in upland areas. Their diet consists of small animals such as insects, their larvae, leeches, crayfish, other small crustaceans, and minnows. Feeding can occur on land or in water.

Mating and egg laying usually occurs from March to May depending on temperatures. During the hot summer months, Spotted Turtles go into aestivation (a time of inactivity), burying themselves in muskrat burrows or leaf litter. During the fall months, there is a short period of activity before they return to their hibernacula. Overwintering occurs in muskrat burrows or in the soft mud at the bottom of the wetlands.

3.0 METHODS

The Habitat Survey methods are approved by the Ohio Division of Wildlife and are conducted in two phases (described below).

3.1 Phase I: Desktop Survey, Museum Search, and Literature Review

A literature review and a search for museum specimens was conducted to determine the history of distribution for Spotted Turtle in Clark County and Champaign County townships adjacent to Moorefield Township, Clark County. Aerial photographs of the areas through which the transmission line is proposed to be routed were examined to look for suitable habitat which consists of, shallow ponds, marshes, and small streams with limited to no canopy cover (open canopy being favorable). Although, they will wander about on land, especially in spring before trees leaf out, they never do so far from water. Warm bodies of water and fast flowing water are avoided. Spotted Turtles may move significant distances during a season and may pass through

unfavorable areas to get to more suitable bodies of water. Site visits were made to examine each body of water crossed by the preferred and alternate transmission line routes.

3.2 Phase II: Site Visits

Site visits were made on February 17, 2017 to examine the four sites identified during desktop surveys to evaluate their suitability as Spotted Turtle habitat.

3.3 Habitat Evaluation

Data from the site visit and desktop surveys were combined to assess the identified sites' potential as Spotted Turtle habitat. Consideration is also given to the percent of the local herpetofauna that has been found in the county. If a high percentage of the species have been reported but Spotted Turtles are among them, it increases the potential that it is not present. However, if the percent of species reported is low, and Spotted Turtles is not among them, it may have been overlooked.

At sites where habitat suitable is available, a Presence-Absence Survey is recommended.

4.0 Results

4.1 Literature Search

Two publications regarding Spotted Turtle localities in Clark and neighboring Champaign County were found. Lewis and Faulhaber (1999) studied the species' home range at Prairie Road Fen which is between 0.4 and 1.0 miles from each of the site identified in Sections 1.1 – 1.4. Turtles fitted with transmitters moved as much as one mile from Prairie Road Fen (Tim Lewis, pers. comm.). The second publication documents Spotted Turtles in neighboring Champaign County, Urbana Township at Cedar Bog, approximately 6.5 miles from the identified sites (Lovich and Jaworski, 1988). Seventy-five percent of the amphibians and reptiles expected in Clark County have been documented by herpetologists (Table 1).

4.2 Museum Search

Spotted Turtles are well documented in the vicinity of the sites identified as providing potential habitat. Clark County records for Spotted Turtles were found in the Cincinnati Museum Center's

Herpetological Photodocumentation Collection. Moorefield Township photovouchers include CMC HP 276-280 from Prairie Road Fen. Richard Phillips, a Wittenberg University Biology professor studying Spotted Turtles at Prairie Road Fen, encountered the species as recently as 2016 (Richard Phillips, pers. comm.). A photograph was taken of a specimen from Gallagher Fen in Clark County, Springfield Township 5.0 – 5.5 miles south of Sites 1.1 – 1.4 and placed in the Cincinnati Museum Center's Photodocumentation Collection (CMC HP 5180). Records from Champaign County, Urbana Township at Cedar Bog are numerous. Voucher specimens are deposited in the Ohio State University Museum, the Cornell University Museum, the University of Michigan Museum of Zoology, the American Museum of Natural History, and the Boonshoft Museum of Discovery in Dayton Ohio.

4.3 Site Visits

4.3.1 The stream at Site 1 is approximately 2 meters wide and a few centimeters deep at the State Route 4 bridge. The water is clear and has some emergent vegetation (watercress). I have seen this site many times while crossing the bridge, and in summer it has significant emergent plants. Darters were observed, indicating high water quality. There was a mix of open canopy with some stretches downstream of the Alternate Route passing under a canopy. **The site provides suitable Spotted Turtle habitat and a Presence – Absence Survey is recommended.**

4.3.2 The stream at Site 2 is the same stream as Site 1 but 0.6 miles to the south and close to its confluence with Buck Creek and in closer proximity to Prairie Road Fen. The water is clear and shallow, with patches of emergent vegetation. Numerous species of small fish were observed. Darters and Mottled Sculpins were among them, both of which indicate high water quality. **The site provides suitable Spotted Turtle habitat and a Presence – Absence Survey is recommended.**

4.3.3 The stream at Site 3 (Figure 5) is approximately 5 – 8 meters wide, 100 – 200 centimeters deep, and has a rocky substrate. The water is clear, but fast-flowing and without emergent vegetation. The stream banks on either side are lined by trees that will create a closed canopy by May. Fish and crayfish were observed. Because of the size and rate of stream flow,

this site does not provide suitable Spotted Turtle habitat. **No further consideration if required for the Spotted Turtle at this site.**

4.3.4 Upon completion of the site visit, Site 4 was determined to be unsuitable for Spotted Turtles. It is a ditch that drains agricultural fields on either side (Figure 6). The substrate was silty clay covered with mats of dead filamentous algae. There was no evidence of emergent vegetation. No fish, crayfish, or insects were observed. **No further consideration if required for the Spotted Turtle at this site.**

5.0 Recommendations

Among the four sites evaluated for their potential as Spotted Turtle habitat, Sites 3 and 4 were unsuitable based on the results of the site visits (see sections 4.3.3 and 4.3.4). Sites 1 and 2 are on the same stream. It is small, shallow, clear, and under a light canopy to no canopy. Fish and Green Frogs were observed at the time of the site visit. There are historic records of Spotted Turtles near both sites, and Spotted Turtle observations at nearby Prairie Road Fen were as recent as 2016. **Presence/Absence Surveys are recommended for Sites 1 and 2.**

Literature Cited

Lewis TL and Faulhaber CA. 1999. Home ranges of spotted turtles (*Clemmys guttata*) in southwestern Ohio. Chelonian Conservation and Biology 3(3):430-434.

Lovich JE and Jaworski TR. 1988. Annotated checklist of amphibians and reptiles reported from Cedar Bog, Ohio. Ohio Journal of Science 88(4):130-143.

Table

Table 1. The percentage of amphibians and reptiles documented by herpetologists provides some measure of their collecting effort in a respective county. Higher levels of effort suggest a higher probability of Spotted Turtles having been found. Seventy-five percent (33) of the 44 species potentially occurring in Clark County have been found and Spotted Turtles are among them.

Taxon	Clark County (documented/expected)
Frogs/Toads	10 of 11
Salamanders	7 of 11
Snakes	8 of 12
Lizards	0 of 2
Turtles	8 of 8
TOTAL	33 of 44 (75%)

Figures

Figure1. A Spotted Turtle (*Clemmys guttata*) from Gallagher Fen, Clark County, Ohio

Figure 2. Four sites identified for site visits along the preferred and alternate transmission line routes. Descriptions of the sites are summarized in Sections 1.1 – 1.4. Site numbers are labeled in gold and their coordinates are provided in white.

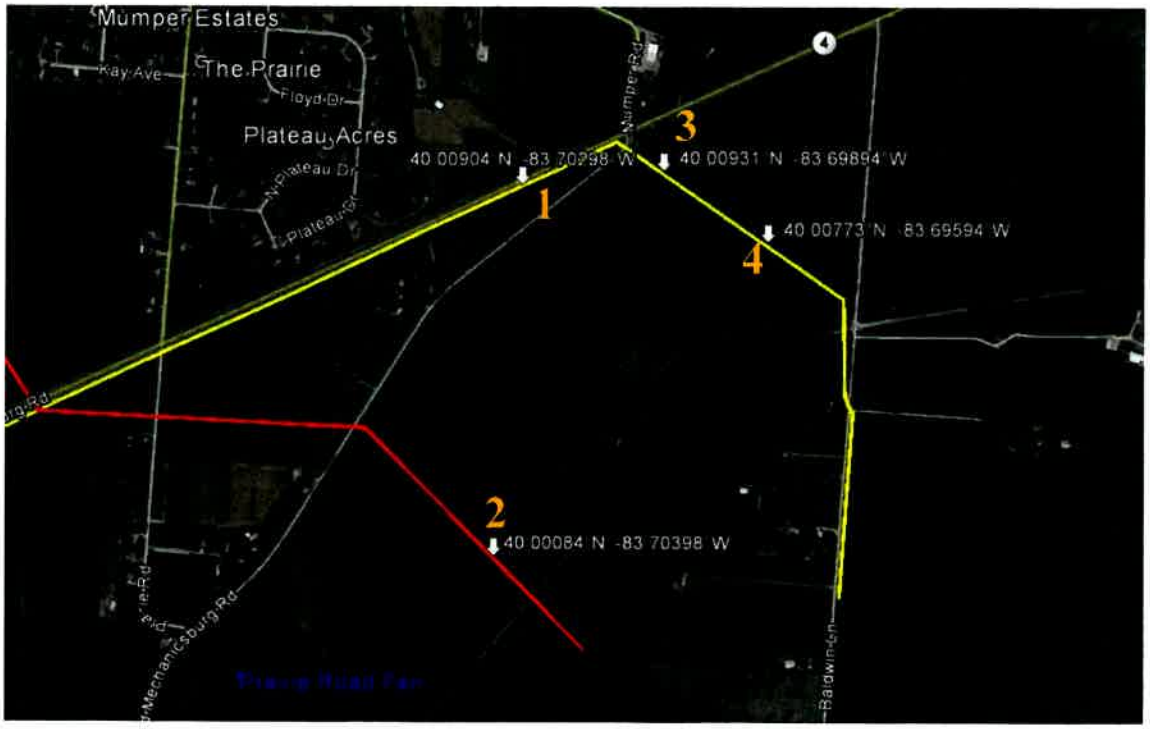

Figure 3. The stream at Site 1 flows from the north, under the bridge at State Route 4 and south to Buck Creek. It is shallow, clear, and has patches of emergent vegetation. February 17, 2017.

Figure 4. Site 2 is in the same stream as Site 1 but approximately 800 meters south of State Route 4 and about 115 meters upstream of its confluence with Buck Creek. February 17, 2017.

Figure 5. This stream at Site 3 flows from north of State Route 4 and south to Buck Creek. At the point where the alternate route would flow over it, the stream is 5 – 8 meters wide, 100 – 200 cm deep, and fast flowing. Trees on either side of the stream will create a canopy after leaf out.

Figure 6. Site 4 is an agricultural drainage ditch. Upon the site visit it appeared to be lifeless. Although it was February 17, the temperature was approximately 64°F. Fish, frogs, and insects were encountered in the streams at Sites 1, 2, and 3. Inset photo shoes decomposing mats of algae on the bottom of the ditch.

Attachment 2B

Report: A Habitat Survey for the Massasauga Rattlesnake along the Preferred and Alternate Routes of the East Springfield-Tangy line in Clark County, Ohio (February 2017)

Final Report: A Habitat Survey for the Massasauga Rattlesnake along the Preferred and Alternate Routes of the East Springfield-Tangy line in Clark County, Ohio.

Submitted to:
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22 February 2017

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Introduction

This report includes the results of a Habitat Survey for the Eastern Massasauga (*Sistrurus catenatus*; Figure 1) along the preferred and alternate routes for a proposed transmission line route in Clark County, Ohio. The Habitat Survey was requested by First Energy Corp.

1.0 Subject Sites

Upon the completion of a desktop survey in which potentially suitable habitat was identified from aerial photographs, soil and topographic maps, and a museum and literature search, four areas of interest were identified along the proposed transmission line route (preferred and alternate) in Moorefield Township, Clark County, Ohio (Figure 2).

1.1 South of Buck Creek, west of Baldwin Lane (39.99935°N -83.70196°W)

This field was planted in row crops during 2015 and 2016. Prior to that it was fallow. It adjoins property owned by the U.S. Army Corps. Of Engineers and leased to the state of Ohio (hereafter referred to as "state property". The existing powerline ROW extending north from near the intersection of Grant and Moorefield Roads provides suitable Massasauga habitat and they have been found historically south of Moorefield Road along that powerline ROW. One of this existing transmission line's poles (pair of poles) is located at the edge of the field at the subject site at 39.99879°N -83.70121°W. During the past two growing seasons when the field was planted in corn, that pair of poles was not tilled. Instead it was left fallow in an area approximately 50 ft. x 90 ft. The fallow area was contiguous with suitable Massasauga habitat adjoining it on state property to the immediate south (Figure 3). The soils in this field are Sovonna silt loam and Lippincott silty clay loam, the latter of which is associated with Massasauga habitat at a site in neighboring Champaign County.

1.2 North of Buck Creek, west of Baldwin Lane (40.00060°N -83.70355°W).

This field has been planted in row crops for at least 20 years, except for two exceptionally wet years when water stood in the field for much of the growing season. At the field's extreme southern end, a swale that is a few feet below grade is not

planted, nor are the edges of the field. Vegetation in the swale is dominated by grasses. The soil is Sloan silt loam.

1.3 East of Twitchell Road (40.00965°N -83.72184°W)

This field is surrounded by row crops and pasture, and it appears that the area of interest, which is dominated by grasses, is mowed for hay. The eastern portion of It is on a slope that has Rodman gravelly loam soil and the western portion is low and flat with Lippincott silty clay loam soil.

1.4 South of Windy Ridge Subdivision (40.00108°N -83.74558°W to 40.00091°N - 83.74278°W).

This site is situated in a low plain southwest of an area known as Windy Ridge. Land use history is diverse. There are remnant wood lots, what appears to be an old pasture, and the edge of an agricultural field planted in row crops. The areas that look to be old pastures have Miamian and Kokomo silty clay loam soil but the canopy is too closed for Massasaugas. In areas where there was no canopy, the field is planted in row crops.

2.0 Massasauga Life History

The Massasauga, which reaches a record length of 100.3 cm (39.5 inches), is the smallest rattlesnake species in Ohio. Most individuals however are approximately 45.7–55.9 cm (18–22 inches) in length. Massasaugas usually have brown or black blotches on a gray or tan background and white and brown stripes on the sides of their head. Some individuals are melanistic, a form which tends to be more common in northern populations.

Massasaugas are almost always associated with wet areas such as bogs, fens, swamps, and the edges of ponds and lakes. They overwinter in these wet areas, especially in crayfish burrows, and are believed to then move into upland habitats dominated by grasses and prairie plants. In some populations only gravid females may demonstrate the habitat change. These grassy areas are almost always a mosaic of small, early successional woody species such as hawthorn (*Crataegus sp.*), dogwood (*Cornus sp.*), multiflora rose (*Rosa multiflora*) or raspberry (*Rubus* sp.). Common

herbaceous species associated with Massasaugas may include the sensitive fern (*Onoclea sensibilis*), goldenrod (*Solidago* sp.), partridge pea (*Cassia fasciculata*), cinquefoil (*Potentilla* sp.), strawberry (*Fragaria* sp.), and *Sphagnum.* This diversity of plant species indicates that the Massasauga can be found in a variety of habitats. It has been suggested that their diets in the spring contain frogs and then switch to small mammals and birds as they move into the higher, drier habitats during summer. Telemetric studies indicate that males and non-pregnant females may range 200–1300 m (650–4,265 feet) from their winter hibernacula. Pregnant females may move 300–600 m (984–1968.5 feet).

Sexual maturity among Massasaugas is believed to be reached at 3–4 years depending upon food availability, length of their activity period, and availability of suitable basking sites. They mate from mid-July to September. From mid-August to September, 3–19 neonates are born close to the mother's hibernaculum. Across their range Massasaugas may reproduce annually or biannually. In captivity the species may live over 20 years and in the wild from 8–10 years.

Massasaugas have been extirpated from much of their historical range as a result of habitat destruction and persecution. Originally found in at least 30 Ohio counties, populations are now thought to occur in eight or nine. Most Ohio Massasauga populations are isolated and there is potential for loss of genetic diversity by inbreeding and genetic drift. Because of the significant decline, the state of Ohio listed the Massasauga as Endangered in 1996 and the U.S. Fish and Wildlife Service listed it as Threatened in October, 2016.

3.0 METHODS

The procedure utilized in this Habitat Survey is that which is recommended by the Ohio Division of Wildlife and the U.S. Fish and Wildlife Service.

3.1 Desktop Survey, Museum Search, and Literature Review

A literature review and a search for museum specimens was conducted to determine the history of distribution for the Massasauga in Clark County. Aerial photographs of the area through which the transmission line is proposed to be routed were examined to

look for suitable vs. unsuitable habitat based on canopy cover (open canopy being favorable) and land use history. Row crops and residential lawns are not suitable for Massasaugas. Soil maps were used to determine if there are hydric soils which are generally associated with known Massasauga habitat. If there are areas along the proposed routes that have an open canopy, hydric soils, and fields dominated by grasses and forbs, site visits were scheduled to look for other characteristics indicative of Massasauga habitat.

3.2 Site Visits

Site visits were made on February 17, 2017 to examine four sites identified during desktop surveys to evaluate their potential as Massasauga habitat. Characteristics examined included identifying dominant vegetation, looking for small mammals, frogs, or other snakes (or habitat suitable for them) that are among the prey species of Massasaugas, and crayfish burrows in which they hibernate. If the site visit is conducted when climatic conditions prohibit finding evidence of small mammals, and other species closely associated with Massasaugas, historic records will be relied upon for evaluations. I have worked extensively near the proposed routes and have more than 20 years of data upon which I can rely in the evaluation process.

3.3 Habitat Evaluation

Data from the site visit and desktop survey were combined to assess the subject site's potential as Massasauga habitat. The assessment is based on seven parameters (Table 1) and three additional considerations (Table 2).

At sites where habitat quality is rated as **high** (7 of 7 parameters) or **moderate** (5 or 6 parameters), a Presence-Absence Survey is recommended. In some cases, there may be extenuating circumstances that discount the habitat quality assessment. Most frequently this is because a subject site is too small to sustain a Massasauga population. If the quality of the habitat is rated as **low** (four or fewer parameters are met), a Presence – Absence Survey will not be recommended.

4.0 Results

The museum and literature search turned up multiple records for Massasaugas in Clark County, Moorefield Township. The most recent records are from Prairie Road Fen State Nature Preserve. Massasaugas were photographed there in 2016, 2015, and 2014 (Davis, 2017). South of Prairie Road Fen on property owned by the U.S. Army Corps. of Engineers, Massasaugas were found during surveys conducted in 2005 (Davis, 2005?). In 2013, a Massasauga was found in a driveway at 5090 Twitchell Road in Springfield (Sanctis, 2013). Recent museum records are non-existent because taking an endangered species for the sake of making it a museum record does not support the conservation measures for the species. Results of the site visit for each of the four potentially suitable sites are reported in sections 4.1 through 4.4 below.

Seventy-five percent of amphibian and reptile species in Clark County (Table 3) suggests that it has been moderately well covered by herpetologist. However, this point is inconsequential because Massasaugas have been found from 0.35 to 1.1 miles from each of the four sites visited.

4.1 South of Buck Creek, west of Baldwin Lane (39.99935°N -83.70196°W)

The existing transmission line poles at the south end of the field are adjacent to state provides that provides suitable habitat for Massasaugas and is just 0.4 miles from an extant population at Prairie Road Fen. An area approximately 40 to 50 feet wide and 90 feet long beneath the poles is not tilled, but instead is contiguous with the suitable habitat on the adjacent land. Seven of seven parameters used to determine Massasauga habitat quality are present under the poles (Table 4). However, the entire field to the north of the poles is planted in row crops and provides no Massasauga habitat.

4.2 North of Buck Creek, west of Baldwin Lane (40.00060°N -83.70355°W).

This field is on the opposite side of Buck Creek from the field describe above. It is 0.35 miles north of Prairie Road Fen. The site had just four of the seven parameters that are typical in Massasauga habitat ranking it as providing poor quality habitat (Table 5). **No further attention regarding Massasaugas is necessary at this site.**

4.3 East of Twitchell Road (40.00965°N -83.72184°W)

Aerial photographs of this site suggested that it might have suitable habitat. More importantly, a Massasauga found in the yard of a Twitchell Road resident in 2013 reinforced that a site visit should be made to this field. As a result of the site visit, it was determined that this field is too small to support a Massasauga population. Furthermore, there is significant relief, and a lack of many of the forbs and shrub typical of known Massasauga habitat. It is 1.0 and 1.1 miles from Prairie Road Fen and the 5090 Twitchell Road where the sighting occurred in 2013. The site had just four of the seven parameters that are typical in Massasauga habitat ranking it as providing poor quality habitat (Table 6). **No further attention regarding Massasaugas is necessary at this site.**

4.4 South of Windy Ridge Subdivision (40.00108°N -83.74558°W to 40.00091°N - 83.74278°W).

The segment of the proposed transmission line that extends through this field is south of a plateau known locally as Windy Ridge. The slope leading down to the transmission line ROW is dominated by grasses, goldenrods, and scattered shrubs, but the relief is too steep for Massasuagas. The transmission line, however, extends through a low area in which there was evidence that water might stand for extended periods during the spring and after rain events. A portion of the segment is bisected by a narrow agricultural field that is planted in row crops. In the portions of the ROW along this segment that are not tilled, there are too many shrubby plants and not enough grasses and goldenrods to provide Massasauga habitat. The site had just four of the seven parameters that are typical in Massasauga habitat ranking it as providing poor quality habitat (Table 7). **No further attention regarding Massasaugas is necessary at this site.**

5.0 Recommendations

A Presence – Absence Survey for Massasaugas is recommended in the field south of Buck Creek and west of Baldwin Lane in the portion of the field that is not tilled (under and around the existing transmission tower) and on the state property immediately adjacent to the tower. Massasaugas move 100s of meters from their wetland

hibernacula to their drier upland feeding grounds. The field at this subject site is for sale. Consequently, it may not be leased to the farmer who farmed it in 2015 and 2016. If it is allowed to go fallow, there is a risk that Massasaugas would move into from the untilled area beneath the transmission poles or state property to the south.

The other three fields that were evaluated for potential Massasauga habitat during site visits do not provide suitable Massasauga habitat and consequently warrant no further attention regarding Massasaugas.

Literature Cited

Davis, J.G. 2015. Final Report: Eastern Massasauga Survey – Southwest Ohio FY 2005. Unpublished Report to the Ohio Division of Wildlife. 37 p.

Davis, J.G. 2017. A Survey for the Eastern Massasauga (Sistrurus catenatus) at Three Historic Sites in Southwest Ohio. Unpublished Report to the Ohio Division of Wildlife. 69 p.

Sanctis, M. 2013. Endangered snake returned to habitat. Sprinfield News-Sun. Posted August 25, 2013. www.springfieldnewssun.com

Tables

Table 1. Eastern Massasauga Habitat Survey Protocol in Ohio. Habitat is assessed as "high quality" if all seven parameters are met, "moderate quality" if 5 or 6 parameters are met and "low quality" of less than five are met.

Number	Habitat Assessment Parameter
1	Presence of crayfish burrows (in wet areas; used as hibernacula)
2	Suitable foraging area (upland grassy areas with habitat for small mammals such as Deer Mice, White-footed Mice, Meadow Voles, or Shrews
3	Basking sites (open canopy in upland areas)
4	Water table close to the soil's surface
5	Vegetation assemblage characteristic of Massasauga habitat (grasses, goldenrod sp., shrubby cinquefoil, dogwood sp., *Equisetum* sp., sensitive fern, etc.)
6	Proximity of the subject site to the nearest historical record for Eastern Massasaugas (within the confines of the county or adjacent sections of neighboring counties)
7	Presences of small mammal burrows (used as Massasauga refugia and indicators of the presence of small mammals)

Table 2. The following information may also be considered when determining a subject site's suitability as Eastern Massasauga habitat. These do not weigh as heavily as the parameters described in Table 1.

Number	Additional considerations for determining Massasauga habitat quality
1	General knowledge of the herpetofauna of the county or area based on museum and literature records.
2	A potential migration corridor exists between nearby suitable habitat and the subject site.
3	If the habitat is suitable but too small to sustain Eastern Massasaugas, or there are other extenuating circumstances, all of the above may be discounted.

Table 3. The percentage of amphibians and reptiles documented by herpetologists provides some measure of their collecting effort in a respective county. Higher levels of effort suggest a higher probability of Eastern Massasaugas having been found. Seventy-five percent (33) of the 44 species potentially occurring in Clark County have been found.

Taxon	Clark County (documented/expected)
Frogs/Toads	10 of 11
Salamanders	7 of 11
Snakes	8 of 12
Lizards	0 of 2
Turtles	8 of 8
TOTAL	33 of 44 (75%)

Table 4. Habitat survey results for the field south of Buck Creek, west of Baldwin Lane (39.99935°N -83.70196°W). Seven of seven parameters used to evaluate Massasauga habitat were present under the transmission line poles at 39.99879°N -83.70121°W and on state owned property immediately south of it ranking the habitat as "high quality habitat" for Massasaugas. North of the transmission poles, the field was planted in row crops during the 2015 and 2016 growing seasons. Consequently, it provides no Massasauga habitat.

Number	Habitat Assessment Parameter	Parameter Present/Absent	Notes
1	Presence of crayfish burrows (Massasauga hibernacula).	Yes	Observed historically on both sides of Baldwin Lane in Buck Creek valley.
2	Suitable foraging area (upland grassy areas with habitat for small mammals) or evidence of small mammals.	Yes	State property adjacent to and immediately south of field has crayfish burrows.
3	Basking sites (open canopy in upland areas)	Yes	Edges along state property and beneath transmission line poles.
4	Water table close to the soil's surface	Yes	In Buck Creek Valley
5	Vegetation assemblage characteristic of Massasauga habitat.	Yes	On adjacent state property and beneath transmission line poles. Not in the field.
6	Proximity of the subject site to a historical record for Eastern Massasaugas.	Yes	Extant population 0.4 miles to the WSW of the field.
7	Presence of or evidence of small mammals.	Yes	Thickets on state property, along fence row and under transmission poles.

*Excellent habitat applies to state property immediately adjacent to the field and in the area beneath the transmission line poles. The field has been planted in row cropped and provides no habitat for Massasaugas.

Table 5. Habitat survey results for the field north of Buck Creek, west of Baldwin Lane (40.00060°N -83.70355°W). Only four of seven parameters used to evaluate Massasauga habitat were present in this field ranking the as "low quality habitat" for Massasaugas.

Number	Habitat Assessment Parameter	Parameter Present/Absent	Notes
1	Presence of crayfish burrows (Massasauga hibernacula).	No	
2	Suitable foraging area (upland grassy areas with habitat for small mammals) or evidence of small mammals.	No	Area is too wet, to open, or row cropped, depending on portion of the field.
3	Basking sites (open canopy in upland areas)	Yes	No canopy is present.
4	Water table close to the soil's surface	Yes	In Buck Creek Valley. Water stands at surface in swale during some years.
5	Vegetation assemblage characteristic of Massasauga habitat.	No	Grasses are present, but no shrubby vegetation to provide shade.
6	Proximity of the subject site to a historical record for Eastern Massasaugas.	Yes	Extant population 0.35 miles to the west of the field.
7	Presence of or evidence of small mammals.	Yes	Grassy fields would support rodent population.

Table 6. Habitat survey results for the field east of Twitchell Road (40.00965°N -83.72184°W). Only four of seven parameters used to evaluate Massasauga habitat were present in this field ranking the as "low quality habitat" for Massasaugas.

Number	Habitat Assessment Parameter	Parameter Present/Absent	Notes
1	Presence of crayfish burrows (Massasauga hibernacula).	No	
2	Suitable foraging area (upland grassy areas with habitat for small mammals) or evidence of small mammals.	Yes	Grasses would support mice.
3	Basking sites (open canopy in upland areas)	Yes	No canopy is present.
4	Water table close to the soil's surface	No	Much of the field is on a slope.
5	Vegetation assemblage characteristic of Massasauga habitat.	No	Grasses are present, but no shrubby vegetation to provide shade.
6	Proximity of the subject site to a historical record for Eastern Massasaugas.	Yes	1.0 miles from Prairie Road Fen. 1.1 miles from Twitchell Road site.
7	Presence of or evidence of small mammals.	Yes	Thickets on state property, along fence row and under transmission poles.

*Area is too small to support a Massasauga population.

Table 7. South of Windy Ridge Subdivision (40.00108°N -83.74558°W to 40.00091°N - 83.74278°W). Only three of seven parameters used to evaluate Massasauga habitat were present in this field ranking the as "low quality habitat" for Massasaugas.

Number	Habitat Assessment Parameter	Parameter Present/Absent	Notes
1	Presence of crayfish burrows (Massasauga hibernacula).	Yes	Burrows were present in the low wet area at this site.
2	Suitable foraging area (upland grassy areas with habitat for small mammals) or evidence of small mammals.	No	Grassy areas were not present.
3	Basking sites (open canopy in upland areas)	No	Too much canopy to provide adequate basking sites for Massasaugas.
4	Water table close to the soil's surface	Yes	Lowest areas showed evidence that water stands for extended periods.
5	Vegetation assemblage characteristic of Massasauga habitat.	No	Very few grasses, goldenrods or other prairied forbs.
6	Proximity of the subject site to a historical record for Eastern Massasaugas.	Yes	1.1 miles from Twitchell Road site. 1.7 miles from Prairie Road Fen.
7	Presence of or evidence of small mammals.	No	Not along transmission line route. Too low and wet. Habitat in the upland area to the north.

*Area has too much canopy to support a Massasauga population.

Figures

Figure 1. An adult Massasauga (*Sistrurus catenatus*) from Prairie Road Fen, Clark County, Ohio.

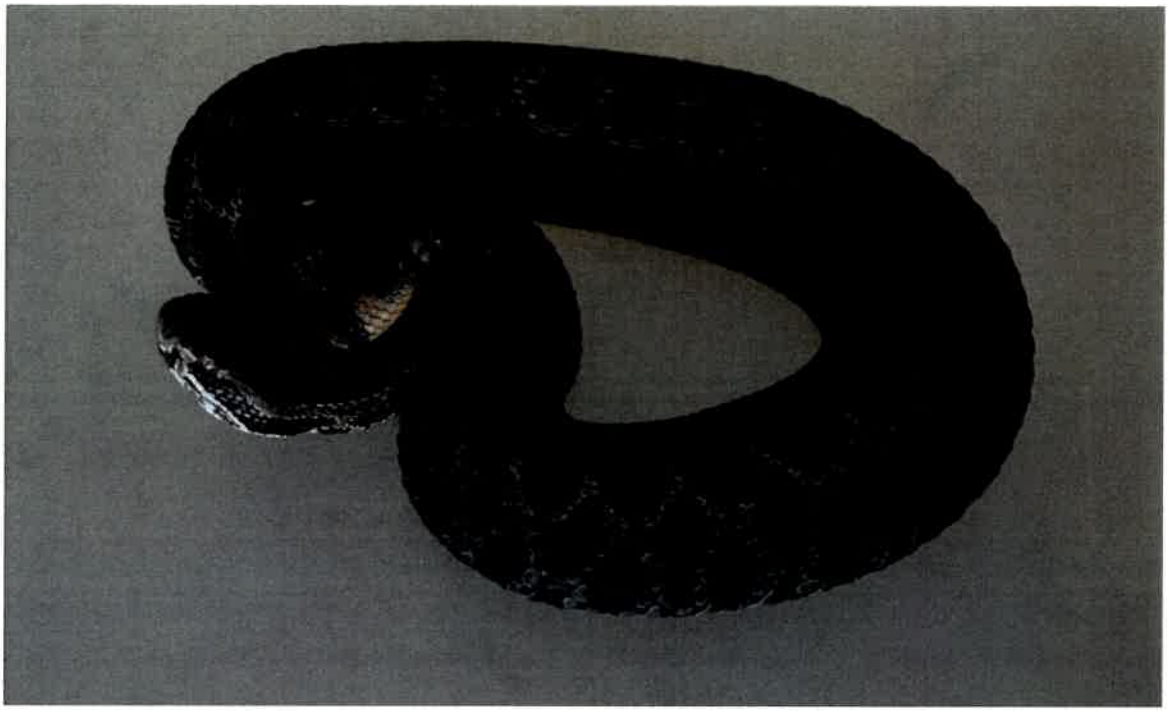
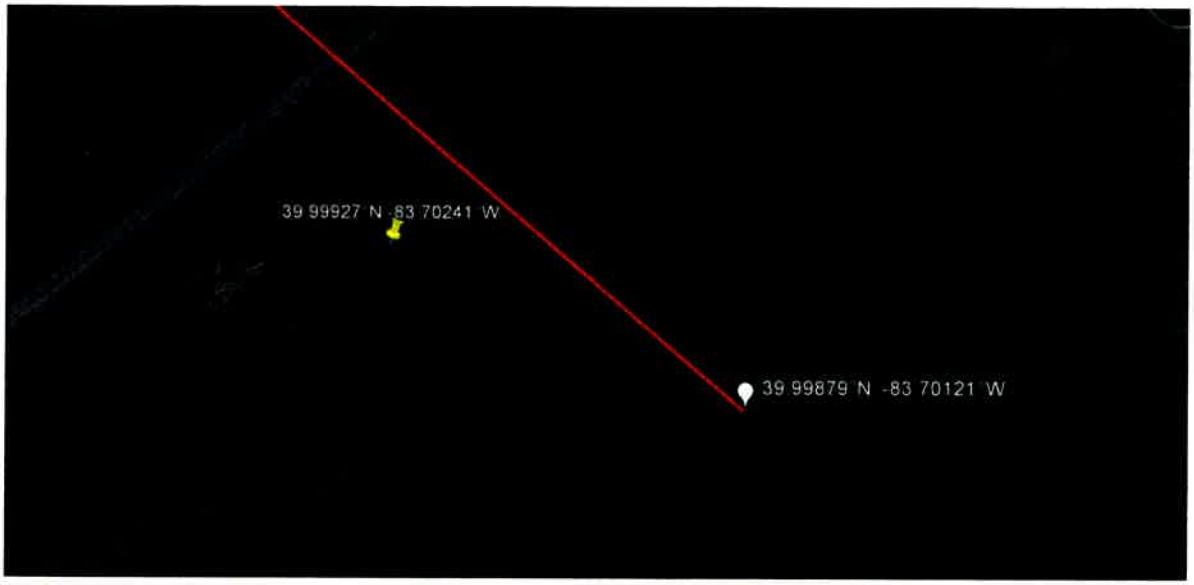


Figure 2. The survey area consists of two routes. Starting at the yellow pushpin and moving east, the red line represents the preferred route and the yellow line is an alternate route.

Figure 3. Top: Existing transmission line tower (white pin) has habitat contiguous with the suitable Massasauga habitat immediately to its south. **Bottom:** Habitat on state property immediately south of and adjacent to the transmission tower pictured above.



Attachment 2C

Report: A Habitat Survey for the Kirtland's Snake along the Preferred and Alternate Routes of the East Springfield-Tangy line in Clark County, Ohio (February 2017)

Final Report: A Habitat Survey for the Kirtland's Snake along the Preferred and Alternate Routes of the East Springfield-Tangy line in Clark County, Ohio.

Submitted to:
Kristin S. Susick
Supervisor, Energy Delivery Support
Environmental Department
First Energy Corp.

22 February 2017

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Introduction

This report includes the results of a Habitat Survey for Kirtland's Snake (*Clonophis kirtlandii*; Figure 1) along the preferred and alternate routes for a proposed transmission line in Clark County, Ohio. The Habitat Survey was requested by First Energy Corp.

1.0 Subject Sites

Upon the completion of a desktop survey in which potentially suitable habitat was identified from aerial photographs, soil and topographic maps, and a museum and literature search, four areas of interest were identified along the proposed transmission line route (preferred and alternate) in Moorefield Township, Clark County, Ohio (Figure 2).

1.1 South of Buck Creek, west of Baldwin Lane (39.99935°N -83.70196°W)

This field was planted in row crops during 2015 and 2016. Prior to that it was fallow. It adjoins property owned by the U.S. Army Corp. of Engineers and leased to the state of Ohio (hereafter referred to as "state property"). The existing powerline ROW extending north from near the intersection of Grant and Moorefield Roads provides suitable Kirtland's Snake habitat and they have been found historically south of Moorefield Road along that powerline ROW. One of this existing transmission line's poles (pair of poles) is located at the edge of the field at the subject site at 39.99879°N -83.70121°W. During the past two growing seasons when the field was planted in corn, that pair of poles was not tilled. Instead it was left fallow in an area approximately 50 ft. x 90 ft. The fallow area was contiguous with suitable Kirtland's Snake habitat adjoining it on state property to the immediate south (Figure 3). The soils in this field are Sovonna silt loam and Lippincott silty clay loam, the latter of which is associated with Kirtland's Snake habitat at a site in neighboring Champaign County.

1.2 North of Buck Creek, west of Baldwin Lane (40.00060°N -83.70355°W).

This field has been planted in row crops for at least 20 years (based on aerial photographs), except for two exceptionally wet years when water stood in the field for much of the growing season. At the field's extreme southern end, a swale that is a few

feet below grade is not planted, nor are the edges of the field. Vegetation in the swale is dominated by grasses. The soil is Sloan silt loam.

1.3 East of Twitchell Road (40.00965°N -83.72184°W)

This field is surrounded by row crops and pasture, and it appears that the area of interest, which is dominated by grasses, is mowed for hay. The eastern portion of It is on a slope that has Rodman gravelly loam soil and the western portion is low and flat with Lippincott silty clay loam soil.

1.4 South of Windy Ridge Subdivision (40.00108°N -83.74558°W to 40.00091°N - 83.74278°W).

This site is situated in a low plain southwest of an area known as Windy Ridge. Land use history is diverse. There are remnant wood lots, what appears to be an old pasture, and the edge of an agricultural field planted in row crops. The areas that look to be old pastures have Kokomo silty clay loam soil. There was limited ground cover from last year's vegetation. Exposed mud and moss suggests that the area is wet much of the year. There was no canopy but there were a few sporadically distributed shrubs.

2.0 Kirtland's Snake Life History

Kirtland's Snake is a small species that seldom reaches 61 cm (24 inches) in total length. Most individuals are 40 – 46 cm (16 – 18 inches). The species has a distinct pattern consisting of several colors but there is very little if any variation. The back is brick red to reddish-brown with alternating black blotches (Figure 1). The top of the head is glossy black and the chin and lip scales are white. The belly is bright red to coral pink and a row of small black dots at each end of the ventral scutes form two parallel, longitudinal spots (Figure 1).

Kirtland's Snake ranges from central and northeastern Illinois across southern Michigan, Indiana and western Kentucky. There are (were) disjunct populations in western Pennsylvania. In Ohio, it is primarily limited to the glaciated portions of the state. This species inhabits moist areas, especially marshy meadows and seepy hillsides where there is limited canopy. It is even found in vacant city lots where the soil is moist and

boards, cardboard, and other debris is available as refugia. It is highly secretive and seldom found moving about in the open. In more pristine habitats where trash and other debris is not prevalent, it is found under rocks, and rotting logs. It is suspected that they spend significant time below ground in crayfish burrows where osmotic regulation is facilitated and earthworms are easily encountered. Regardless of the habitat, a common denominator is the presence of earthworms and slugs. Crayfish and minnows are occasionally eaten. During early spring, they are often found covered with mud, indicating that hibernation occurs in crayfish burrows or perhaps, abandoned small mammal burrows.

Courtship and mating occur during spring and females give birth to live young between the end of July and late September. Litter size averages 4 – 15; the average being eight. Neonates look like miniature versions of adults, although their dorsal colors are somewhat darker, their belly decidedly redder, and their head is proportionately larger. At birth, they range from 10.0 – 17.5 cm (4 – 7 inches) in total length.

Kirtland's Snakes are often found sympatrically with Eastern and Plains Gartersnakes (*Thamnophis sirtalis* and *T. radix*), Dekay's Brownsnakes (*Storeria dekayi*), Smooth Greensnakes (*Opheodrys vernalis*) and Massasaugas (*Sistrurus catenatus*).

In some areas, Kirtland's Snake can be common, but in general, populations are declining across its range. It is listed as Threatened in Ohio and Illinois, Endangered in Indiana, Kentucky, and Michigan, and it appears to be extirpated in Pennsylvania. Its federal status is currently being reviewed by the U.S. Fish and Wildlife Service.

3.0 METHODS

The procedure utilized in this Habitat Survey is adapted from the Massasuaga Habitat Survey and was approved by the Terrestrial Wildlife Diversity Program Administrator at Ohio Division Of Wildlife - Ohio Division Of Wildlife.

3.1 Desktop Survey, Museum Search, and Literature Review

A literature review and a search for museum specimens was conducted to determine the history of distribution for Kirtland's Snake in Clark County and Champaign County townships adjacent to Moorefield Township, Clark County. Aerial photographs of the areas through which the transmission line is proposed to be routed were examined to look for suitable habitat based on canopy cover (open canopy being favorable) and land use history. Row crops and residential lawns are not suitable for Kirtland's Snakes. Soil maps were used to determine if there are hydric soils which are generally associated with the species' habitat at known locations. If there are areas along the proposed routes that have an open canopy, hydric soils, and wet fields dominated by grasses and forbs, site visits were scheduled to look for other characteristics indicative of Kirtland's Snake habitat.

3.2 Site Visits

Site visits were made on February 17, 2017 to examine four sites identified during desktop surveys to evaluate their potential as Kirtland's Snake habitat. Characteristics examined included identifying dominant vegetation, looking for crayfish burrows, and areas that appear to be damp to wet much of the year.

3.3 Habitat Evaluation

Data from the site visit and desktop survey were combined to assess the subject site's potential as Kirtland's Snake habitat. The assessment is based on six parameters (Table 1). Consideration is also given to the percent of the local herpetofauna that has been found in the county. If a high percentage of the species have been reported but Kirtland's Snake is not among them, it increases the probability that it is not present. However, if the percent of species reported is low, and Kirtland's Snake is not among them, it may have been overlooked.

At sites where habitat quality is rated as **high** (6 of 6 parameters) or **moderate** (4 or 5 parameters), a Presence-Absence Survey is recommended.

4.0 Results

The museum and literature search turned up recent records for Kirtland's Snake in Clark County, Bethel Township and Urbana Township in neighboring Champaign County. A Kirtland's Snake collected in Clark County in 2011 is deposited in the Cincinnati Museum Center's collection (CMC 12281). Several collected in Champaign County, Urbana Townships in 2007 are in the CMC collection (CMC 10665, 10978 – 10982). Davis (2012) reported on the Clark County, Bethel Township specimen and Davis (2017) reported several recently encountered at Cedar Bog in Champaign County, Urbana Township.

Results of the site visit for each of the four potentially suitable sites are reported in sections 4.1 through 4.4 below. Seventy-five percent of amphibian and reptile species in Clark County (Table 2) suggests that it has been moderately well covered by herpetologist. However, this point is inconsequential because Kirtland's Snakes have been found in Clark County and approximately 6 miles away at Cedar Bog in Champaign County.

4.1 South of Buck Creek, west of Baldwin Lane (39.99935°N -83.70196°W)

The existing transmission line poles at the south end of the field are adjacent to state property that provides suitable habitat for Kirtland's Snake and is just 0.4 miles from an extant population at Prairie Road Fen. An area approximately 40 to 50 feet wide and 90 feet long beneath the poles is not tilled, but instead is contiguous with the suitable habitat on the adjacent land. All six of the six parameters used to determine Kirtland's Snake habitat quality were present under the poles and in the untilled area around them, as well as the adjacent state land (Table 3). **A Presence-Absence Survey for Kirtland's Snake is recommended at this site.**

4.2 North of Buck Creek, west of Baldwin Lane (40.00060°N -83.70355°W).

This field is on the opposite side of Buck Creek from the field described above. The site had five of the six parameters that are typical in Kirtland's Snake. The proposed transmission line passes over approximately 240 linear feet of this field. However, most of those linear feet are planted in row crops and those that are not, are in segments only

25 – 40 feet wide, with a monoculture of grasses. Consequently, this is **probably not suitable** for Kirtland's Snake, despite five of the six parameters used to quantify habitat for the species being present. (Table 4). **No further attention regarding Kirtland's Snake is necessary at this site.**

4.3 East of Twitchell Road (40.00965°N -83.72184°W)

Aerial photographs of this site suggested that it might have suitable habitat. However, as a result of the site visit, it was determined that this field is too dry to support a Kirtland's Snake population. The site had just two of the six parameters that are typical in Kirtland's Snake habitat ranking it as providing poor quality habitat (Table 5). **No further attention regarding Kirtland's Snake is necessary at this site.**

4.4 South of Windy Ridge Subdivision (40.00108°N -83.74558°W to 40.00091°N - 83.74278°W).

The segment of the proposed transmission line that extends through this field is south of a plateau known locally as Windy Ridge. The slope leading down to the transmission line ROW is dominated by grasses, goldenrods, and scattered shrubs. The transmission line, however, extends through a low area in which there was evidence that water might stand for extended periods during the spring and after rain events, but it has more canopy cover than is typical of Kirtland's Snake habitat (Table 6). The portion of the segment that does not have a canopy is planted in row crops. The combination of closed canopy and row cropping leaves to little suitable habitat to support a Kirtland's Snake population. **No further attention regarding Kirtland's Snake is necessary at this site.**

5.0 Recommendations

A Presence – Absence Survey for Kirtland's Snake is recommended in the field south of Buck Creek and west of Baldwin Lane in the portion of the field that is not tilled (under and around the existing transmission tower) and on the state property immediately adjacent to the transmission line poles. None of the other

sites that were visited on February 17 require further consideration regarding Kirtland's Snakes.

Literature Cited

Davis, J.G. 2012. Final Report: An Eastern Massasauga (Sistrurus catenatus) Survey near Medway, Ohio (Clark County) in 2011. Unpublished Report to the U.S. Fish and Wildlife Service. 15 p.

Davis, J.G. 2017. A Survey for the Eastern Massasauga (Sistrurus catenatus) at Three Historic Sites in Southwest Ohio. Unpublished Report to the Ohio Division of Wildlife. 69 p.

Tables

Table 1. Kirtland's Snake Habitat Survey Protocol in Ohio. Habitat is assessed as "high quality" if all six parameters are met, "moderate quality" if four or five parameters are met and "low quality" if less than four are met.

Number	Habitat Assessment Parameter
1	Presence of crayfish burrows (in wet areas; used as refugia and hibernacula)
2	Suitable foraging area (low wet areas with (or suitable for) earthworms and slugs
3	Soil that remains moist for much of the year (soil type is muck or with significant clay content).
4	Water table close to the soil's surface or seeps (often indicated by the presence of chimney building crayfish).
5	Open to light canopy, but not a closed canopy.
6	Proximity of the subject site to the nearest historical record for Kirtland's Snake (within the confines of the county or adjacent areas of neighboring counties).

Table 2. The percentage of amphibians and reptiles documented by herpetologists provides some measure of their collecting effort in a respective county. Higher levels of effort suggest a higher probability of Kirtland's Snakes having been found. Seventy-five percent (33) of the 44 species potentially occurring in Clark County have been found.

Taxon	Clark County (documented/expected)
Frogs/Toads	10 of 11
Salamanders	7 of 11
Snakes	8 of 12
Lizards	0 of 2
Turtles	8 of 8
TOTAL	33 of 44 (75%)

Table 3. Habitat survey results for the field south of Buck Creek, west of Baldwin Lane (39.99935°N -83.70196°W). Six of six parameters used to evaluate Kirtland's Snake habitat were present under the transmission line poles at 39.99879°N -83.70121°W and on state property immediately south of it ranking the habitat as "high quality habitat" for Kirtland's Snake.

Number	Habitat Assessment Parameter	Parameter Present/Absent	Notes
1	Presence of crayfish burrows (Kirtland's Snake refugia, and hibernacula).	Yes	Observed historically on both sides of Baldwin Lane in Buck Creek valley.
2	Suitable foraging area (low wet areas with (or suitable for) earthworms and slugs.	Yes	See Figure 3
3	Soil that remains moist for much of the year (soil type is muck or with significant clay content).	Yes	Sovonna silt loam and Lippincott silty clay loam.
4	Water table close to the soil's surface or seeps (often indicated by the presence of chimney building crayfish).	Yes	In Buck Creek Valley
5	Open to light canopy, but not a closed canopy.	Yes	On adjacent state land and beneath transmission line poles. Not in the field.
6	Proximity of the subject site to the nearest historical record for Kirtland's Snake (within the confines of the county or adjacent areas of neighboring counties).	Yes	Extant population approximately 6 miles WNW at Cedar Bog, Champaign County, Urbana Township.

Table 4. Habitat survey results for the field north of Buck Creek, west of Baldwin Lane (40.00060°N -83.70355°W). Five of six parameters used to evaluate Kirtland's Snake habitat were present in this field. However, the proposed transmission line passes over approximately 240 linear feet of this field. Most of those linear feet are planted in row crops and those that are not, are in segments only 25 – 40 feet wide, with a monoculture of grasses. Consequently, this is probably not suitable for Kirtland's Snake, despite five of the six parameters used to quantify habitat for the species being present.

Number	Habitat Assessment Parameter	Parameter Present/Absent	Notes
1	Presence of crayfish burrows (Kirtland's Snake refugia, and hibernacula).	No	
2	Suitable foraging area (low wet areas with (or suitable for) earthworms and slugs.	Yes	
3	Soil that remains moist for much of the year (soil type is muck or with significant clay content).	Yes	
4	Water table close to the soil's surface or seeps (often indicated by the presence of chimney building crayfish).	Yes	In Buck Creek Valley
5	Open to light canopy, but not a closed canopy.	Yes	On adjacent state property and beneath transmission line poles. Not in the field.
6	Proximity of the subject site to the nearest historical record for Kirtland's Snake (within the confines of the county or adjacent areas of neighboring counties).	Yes	Extant population approximately 6 miles WNW at Cedar Bog, Champaign County, Urbana Township.

Table 6. Habitat survey results for the field east of Twitchell Road (40.00965°N -83.72184°W). Only two of six parameters used to evaluate Kirtland's Snake habitat were present in this field ranking the as "low quality habitat" for Kirtland's Snake.

Number	Habitat Assessment Parameter	Parameter Present/Absent	Notes
1	Presence of crayfish burrows (Kirtland's Snake refugia, and hibernacula).	No	None observed.
2	Suitable foraging area (low wet areas with (or suitable for) earthworms and slugs.	No	Appears too dry to support earthworms and slugs.
3	Soil that remains moist for much of the year (soil type is muck or with significant clay content).	No	No indication that the ground is wet. May be tiled and drained.
4	Water table close to the soil's surface or seeps (often indicated by the presence of chimney building crayfish).	No	Much of the field is on a slope.
5	Open to light canopy, but not a closed canopy.	Yes	
6	Proximity of the subject site to the nearest historical record for Kirtland's Snake (within the confines of the county or adjacent areas of neighboring counties).	Yes	Extant population approximately 6 miles WNW at Cedar Bog, Champaign County, Urbana Township.

Table 6. South of Windy Ridge Subdivision (40.00108°N -83.74558°W to 40.00091°N - 83.74278°W). Five of six parameters used to evaluate Kirtland's Snake habitat were present in this field. However, the combination of a closed canopy and row cropping leave too little habitat to support a population of Kirtland's Snake.

Number	Habitat Assessment Parameter	Parameter Present/Absent	Notes
1	Presence of crayfish burrows (Kirtland's Snake refugia, and hibernacula).	Yes	Burrows were present in the low wet area at this site.
2	Suitable foraging area (low wet areas with (or suitable for) earthworms and slugs.	Yes	Low wet area was present
3	Soil that remains moist for much of the year (soil type is muck or with significant clay content).	Yes	Miamian and Kokomo silty clay loams are present but under a canopy or planted in row crops.
4	Water table close to the soil's surface or seeps (often indicated by the presence of chimney building crayfish).	Yes	Burrows present but under canopy and at the edge of row cropped area.
5	Open to light canopy, but not a closed canopy.	No	Suitably wet areas under canopy or planted in row crops.
6	Proximity of the subject site to the nearest historical record for Kirtland's Snake (within the confines of the county or adjacent areas of neighboring counties).	Yes	Extant population approximately 6 miles WNW at Cedar Bog, Champaign County, Urbana Township.

Figures

Figure 1. Left: An adult Kirtland's Snake (*Clonophis kirtlandii*) from Cedar Bog, Champaign County, Urbana Township, Ohio. **Right:** Ventral view of a Kirtland's Snake from Spring Valley Wildlife Area, Greene County, Ohio.

Figure 2. The survey area consists of two routes. Starting at the yellow pushpin and moving east, the red line represents the preferred route and the yellow line is an alternate route.

Figure 3. Top: Existing transmission line tower (white pin) has habitat contiguous with the suitable Kirtland's Snake habitat immediately to its south. **Bottom:** Habitat on state property immediately south of and adjacent to the transmission tower pictured above.

Attachment 2D

Report: Site Visit to the Agricultural Field South and East of Old Mechanicsburg Road in Clark County, Ohio (September 2017)

Site Visit to the Agricultural Field South and East of Old Mechanicsburg Road in Clark County, Ohio

Submitted to:

Kristin Susick

Supervisor, Energy Delivery Support

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12 September 2017

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The field south and east of Old Mechanicsburg Road in Clark County (Figure 1; hereafter referred to as the Davis field) was visited on September 11, 2017 to assess the margins of the parcel as habitat for Spotted Turtles and Massasaugas, the former of which is an Ohio threatened species and the latter a federally threatened species. The eastern margin of the field is lined by a slow flowing ditch that has a soft muddy bottom with patches of emergent vegetation and scattered duckweed. The southern border is adjacent to Prairie Road Fen which is owned by the U.S. Army Corps. of Engineers and managed by the Ohio Division of Natural Areas and Preserves. Prairie Road Fen has both Spotted Turtles and Massasaugas.

The ditch along the western margin of the Davis field provides excellent Spotted Turtle habitat (Figure 2) and they have historically used the ditches connected to Prairie Road Fen where the most recent sighting was in June 2017 (Richard Phillips, pers. comm.). The space between the ditch and its interface of the row crops (soy beans) in the Davis field and native vegetation along the ditch provides potential nesting habitat for Spotted Turtles. When turtles dig nests in spring, the crops in the field will be low and suitable nesting can occur right up to the edge of the tilled soil (Figure 3). A Snapping Turtle nest was found during the pedestrian survey.

At the south edge of the Davis field, there is a margin between the edge of the row crops and property line that could potentially be used by Massasaugas that might move north out of the adjacent field at Prairie Road Fen. Massasaugas occur at Prairie Road Fen and have been found within 30 meters of the southwest corner of the subject site. Because of their proximity and the potential habitat up to the edge of the agricultural field, there is a strong argument for monitoring the south end of the Davis field during construction.

Figure 4 illustrates the areas identified as the edge of potential Massasauga habitat and nesting habitat for Spotted Turtles base on the September 11, 2017 pedestrian survey. The eastern half of the southern edge of the Davis field is adjacent to a woodland. The canopy of the woodland would exclude Massasaugas.

Additional photographs are included at the end of this report.

Figure 1. The yellow line represents the margins of the field that were walked to assess the potential for Spotted Turtles and Massasaugas. The north-south line parallels a slow flowing, shallow ditch. The loop at the eastern edge at the south end of the field was walked but has or is adjacent to a canopy that would exclude Massasaugas.

Figure 2. The ditch along the western margin of the agricultural field provides excellent Spotted Turtle habitat.

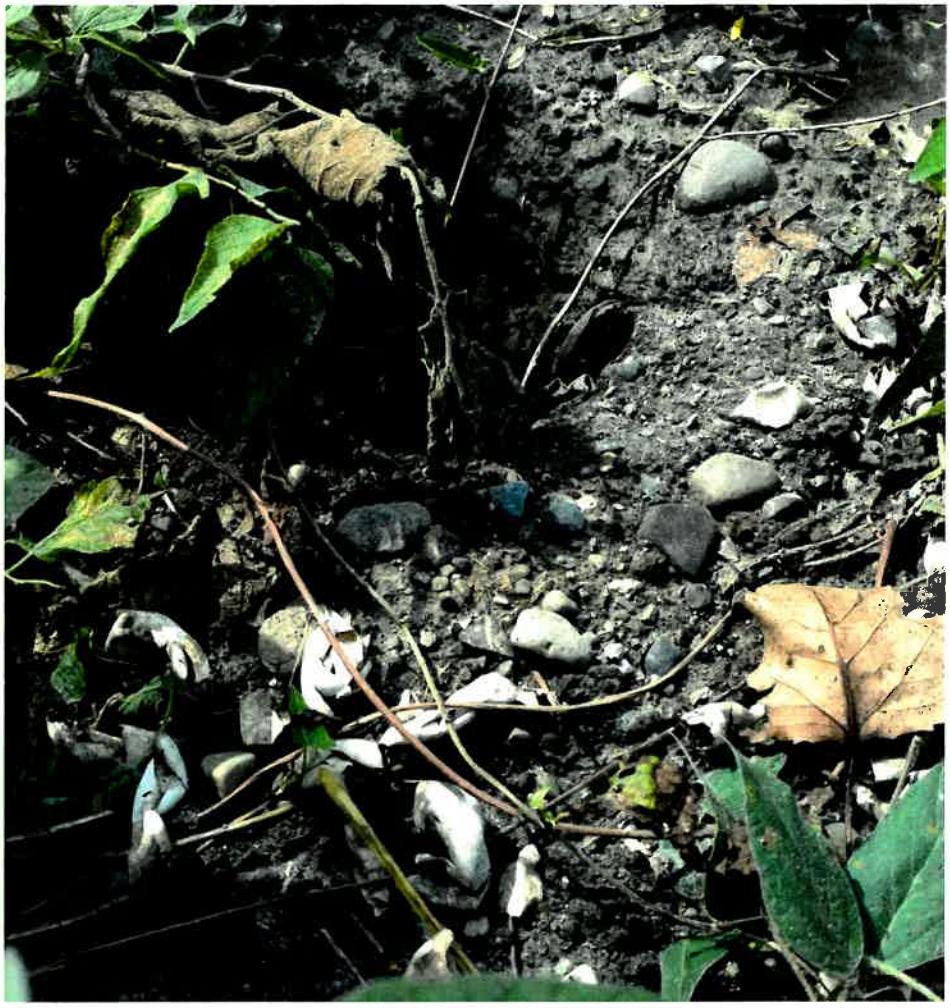


Figure 3. Snapping Turtle nest found at the interface of the row crops and native vegetation.

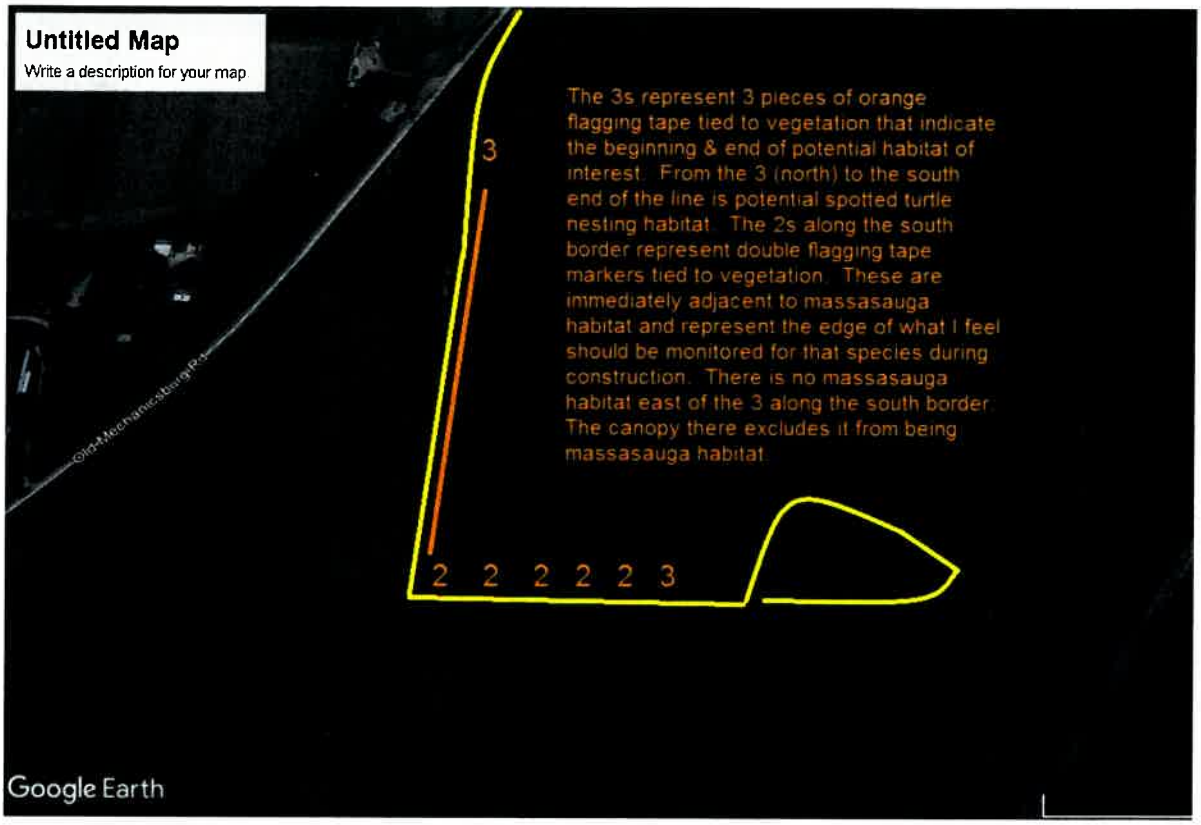
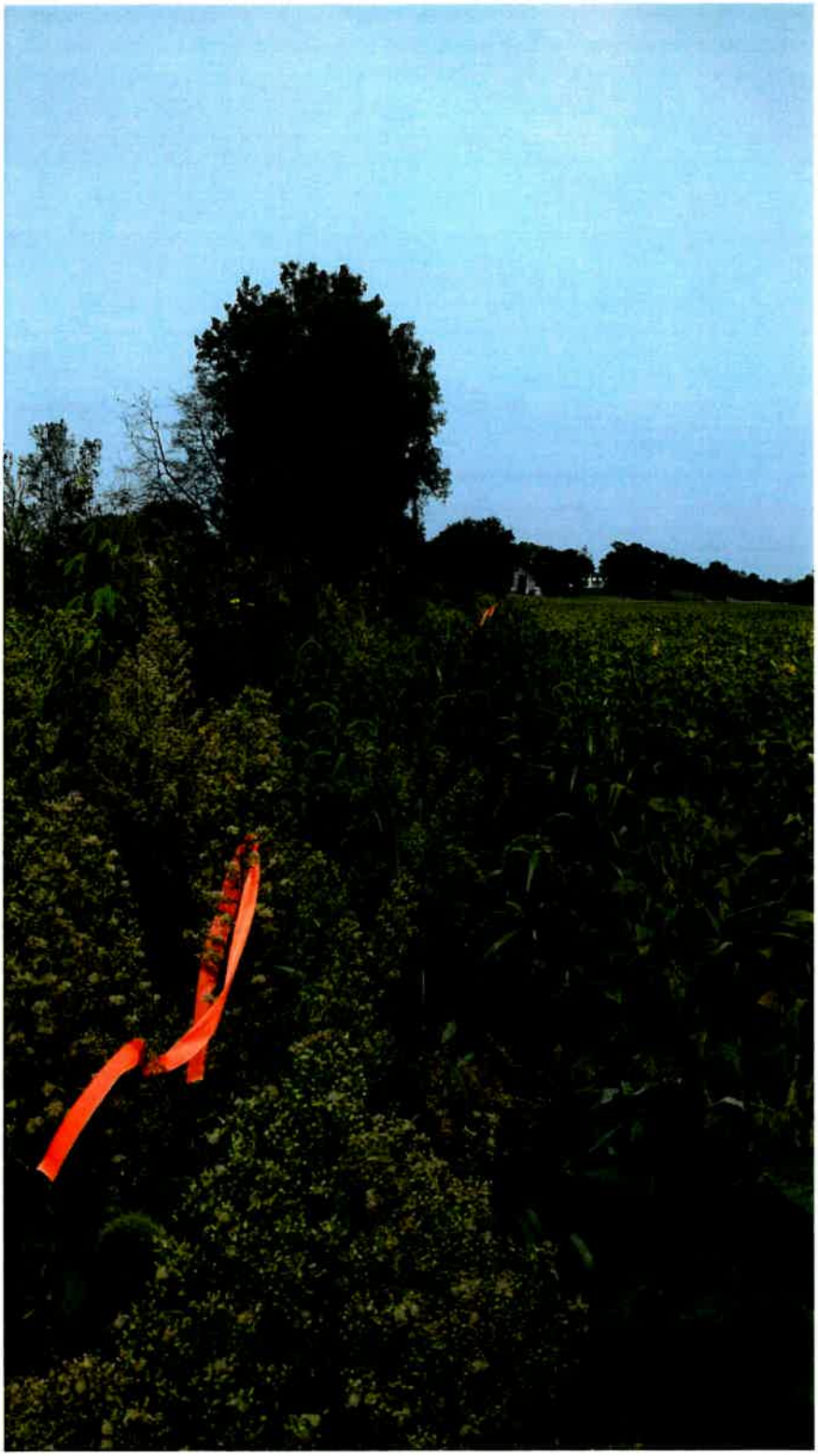


Figure 4. Areas identified as the edge of potential Massasauga habitat and nesting habitat for Spotted Turtles base on the September 11, 2017 pedestrian survey. The orange north-south oriented line is at the interface of the native vegetation adjacent to a ditch and the row cropped field to the east. The area between the orange line and the ditch provides potential Spotted Turtle nesting habitat. The yellow line along the southern edge of the field is at the property boundary between the Davis field and Prairie Road Fen. Potential Massasauga habitat occurs north of the property boundary marked by "2s". The "3" marks the eastern edge of potential Massasauga habitat. East of the "3", there is a dense canopy. Massasaugas do not use habitats under a canopy.

Additional Photographs



Western edge of the Davis field looking north. Orange flagging tape marks the interface of the agricultural field and the native vegetation east of the ditch.

Property boundary along the south edge of the Davis field. East of this property marker, the canopy is dense and the habitat is not suitable for Massasaugas.

Attachment 3

Presence – Absence Survey Reports

Attachment 3A

Report: A Presence – Absence Survey for the Massasauga Rattlesnake along the East Springfield-Tangy Transmission Lines in Clark County, Ohio (October 2017)

Final Report: A Presence – Absence Survey for the Massasauga Rattlesnake along the East Springfield-Tangy Transmission Lines in Clark County, Ohio.

Submitted to:
Kristin S. Susick
Supervisor, Energy Delivery Support
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First Energy Corp.

27 October 2017

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Introduction

This report includes the results of a Presence – Absence Survey for the Massasauga (*Sistrurus catenatus*; Figure 1) along a segment of the East Springfield-Tangy Transmission Line between Baldwin Lane and Buck Creek in Clark County, Ohio (Figure 2). The Survey was conducted at the request of First Energy Corp. as the result of a Habitat Survey performed on February 17, 2017. Seven of seven parameters used to assess the suitability of habitat for Massasaugas were identified during the Habitat Survey ranking it as providing high quality habitat.

1.0 Site Description

The site on which the Presence – Absence Survey was conducted is located west of Baldwin Lane and east of Buck Creek. A pair of transmission line poles located at approximately 39.99879°N -83.70121°W are situated at the edge of an agricultural field adjacent to property owned by the U.S. Army Corps of Engineers, leased to the state, and managed by Buck Creek State Park. The latter will hereafter be referred to as "state property". An area under and around the transmission line poles approximately 15 meters wide and 30 meters long and the adjacent fence row were not planted in row crops in previous years. Again, in 2017, the area was left fallow while the field to the north was planted in soy beans. Immediately south of, and contiguous with, the state property is a mix of open-canopy field dominated by grasses, goldenrods, and other forbs and early successional forest. The right of way (ROW) under the existing First Energy transmission lines has an open canopy that extends south approximately one-half mile to Grant Road. The entire area is in the Buck Creek flood plain and the soils are Lippincott silty clay loam and Sovonna silt loam. The former is associated with Massasauga habitat in neighboring Champaign County.

2.0 Massasauga Life History

The Massasauga, which reaches a record length of 100.3 cm (39.5 inches), is the smallest rattlesnake species in Ohio. Most individuals however are approximately 45.7–55.9 cm (18–22 inches) in length. Massasaugas usually have brown or black blotches on a gray or tan background and white and brown stripes on the sides of their head.

Some individuals are melanistic, a form which tends to be more common in northern populations.

Massasaugas are almost always associated with wet areas such as bogs, fens, swamps, and the edges of ponds and lakes. They overwinter in these wet areas, especially in crayfish burrows, and are believed to then move into upland habitats dominated by grasses and prairie plants. In some populations, only gravid females may demonstrate the habitat change. These grassy areas are almost always a mosaic of small, early successional woody species such as hawthorn (*Crataegus sp.*), dogwood (*Cornus sp.*), multiflora rose (*Rosa multiflora*) or raspberry (*Rubus* sp.). Common herbaceous species associated with Massasaugas may include the sensitive fern (*Onoclea sensibilis*), goldenrod (*Solidago* sp.), partridge pea (*Cassia fasciculata*), cinquefoil (*Potentilla* sp.), strawberry (*Fragaria* sp.), and *Sphagnum*. This diversity of plant species indicates that the Massasauga can be found in a variety of habitats. It has been suggested that their diets in the spring contain frogs and then switch to small mammals and birds as they move into the higher, drier habitats during summer. Telemetric studies indicate that males and non-pregnant females may range 200–1300 m (650–4,265 feet) from their winter hibernacula. Pregnant females may move 300–600 m (984–1968.5 feet).

Sexual maturity among Massasaugas is believed to be reached at 3–4 years depending upon food availability, length of their activity period, and availability of suitable basking sites. They mate from mid-July to September. From mid-August to September 3–19 neonates are born close to the mother's hibernaculum. Across their range Massasaugas may reproduce annually or biannually. In captivity, the species may live over 20 years and in the wild from 8–10 years.

Massasaugas have been extirpated from much of their historical range as a result of habitat destruction and persecution. Originally found in at least 30 Ohio counties, populations are now thought to occur in eight or nine. Most Ohio Massasauga populations are isolated and there is potential for loss of genetic diversity by inbreeding and genetic drift. Because of the significant decline, the state of Ohio listed the

Massasauga as Endangered in 1996 and the U.S. Fish and Wildlife Service listed it as Threatened in October 2016.

3.0 METHODS

The procedure utilized in this Habitat Survey is that which is recommended by the Ohio Division of Wildlife and was devised with the assistance of a U.S. Fish and Wildlife Service employee.

3.1 Coverboards

Seventy-five coverboards (2 ft. x 5.5 ft. corrugated roofing tin) were placed on the ground at the survey site on April 20, 2017. Coverboards are used by snakes for thermoregulation and as refugia. Snakes that have recently eaten, those preparing to shed their skin, and pregnant females are most frequently encountered beneath them. The height of the vegetation surrounding the coverboards and trails between them were maintained with a weed eater at approximately 10–12 inches.

3.2 Site Visits

Weekly site visits were made between April 27 and October 26, 2017 (Table 1) to overturn coverboards to look for Massasaugas, suitable prey for them, and other snake species. In addition to checking coverboards for snakes, visual searches were conducted as well to look for basking or foraging snakes. All snakes and potential prey species for Massasaugas were recorded and their locations were noted as on state property on the "farm side" of the property line. The farm side of the site included the fence row and the fallow area beneath the transmission line poles.

4.0 Results

4.1 Snake Sightings

No Massasaugas were encountered during the Presence – Absence Survey. Three other species were recorded (Table1). Eastern Milksnakes (*Lampropeltis triangulum*; Figure 3) were observed only on the state side of the study area. DeKay's Brownsnakes (*Storeria dekayi*; Figure 4) and Eastern Gartersnakes (*Thamnophis sirtalis*; Figure 5)

were found on both the farm side and the state side of the study area. All species were observed on multiple occasions.

4.2 Potential Prey Sightings

Three species of small mammals, all of which are known to preyed upon by Massasaugas were identified at the site on both the farm and state side of the study area (Table 1). They include the Short-tailed Shrew (*Blarina brevicauda*), Meadow Vole (*Microtus pennsylvanicus*), and *Peromyscus* sp. (either White-footed or Deer Mice). White-footed and Deer Mice are identified by the degree of coloration of the fur on the underside of the tail. None of the mice were captured. There were only visually observed as the coverboards were lifted, so *Peromyscus* were identified only to genus.

4.3 Amphibian Sightings

Northern Leopard Frogs (*Lithobates pipiens*) which are considered potential prey of Massasaugas by some authorities were observed on the state property side of the study area and American Toads (*Anaxyrus americanus*) were observed frequently on the farm side.

5.0 Recommendations

Upon completion of the Presence – Absence Survey, with no Massasaugas found in the survey area, **no further consideration regarding Massasaugas at the survey site east of Buck Creek is recommended.** It is important to note, however that per discussions in mid-September regarding rerouting the transmission line on the west side of Buck Creek, that Massasaugas have been observed at Prairie Road Fen State Nature Preserve, approximately 30 meters from a small segment of the proposed reroute.

Figures

Figure 1. An adult Massasauga (*Sistrurus catenatus*) from Clark County, Ohio.

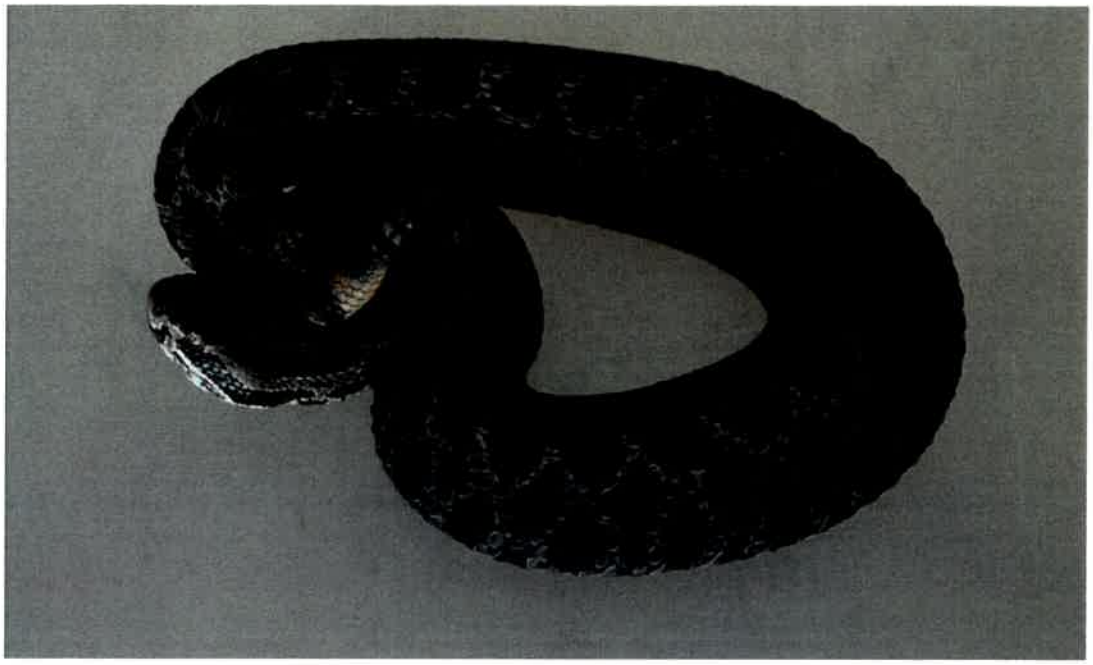

Figure 2. The survey area, outlined in yellow, straddles the border between an agricultural field to the north and land owned by the U.S. Army Corps of Engineers, leased to the state park system, and managed as part of Buck Creek State Park. The pale blue line is the approximate boundary between the privately owned agricultural land to the north and the state land to the south. The thin white lines show existing transmission lines and the short red line marks the approximate position of the existing pair of transmission line poles.

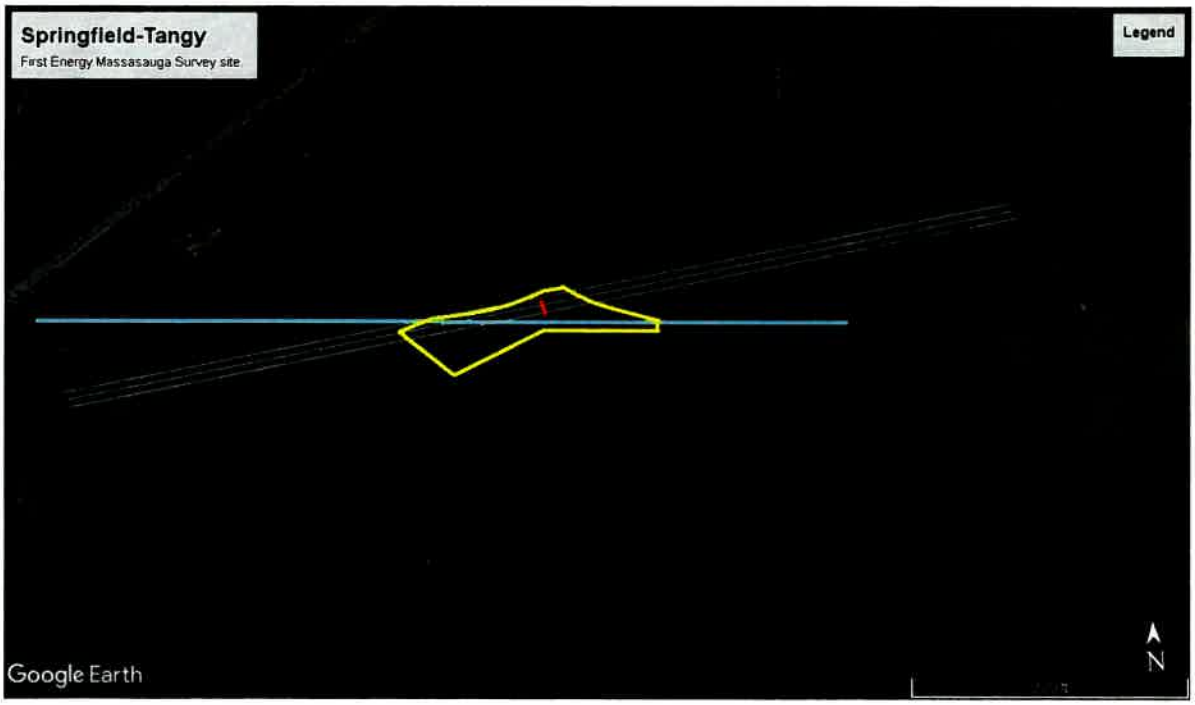

Figure 3. One of the Eastern Milksnakes (*Lampropeltis triangulum*) encountered at the study site.

Figure 4. One of the DeKay's Brownsnakes (*Storeria dekayi*) encountered at the study site.

Figure 5. One of the Eastern Gartersnakes (*Thamnophis sirtalis*) encountered at the study site.

Tables

Table 1. Dates of site visits and species encountered by date. Red indicates an encounter on the state property side of the study area and blue indicates an encounter on the farm side of the study area.

Date	Eastern Milksnake	Dekay's Brownsnake	Eastern Gartersnake	Short-tailed Shrew	Meadow Vole	*Peromyscus* sp.
April 20						
April 27						
April 30						
May 7						
May 11						
May 17						
May 24						
May 31						
June 7						
June 15						
June 21						
June 27						
July 5						
July 11						
July 20						
July 25						
August 2						
August 7						
August 15						
August 22						
August 29						
September 3						
September 11						
September 17						
September 25						
October 3						
October 10						
October 19						
October 26						

Attachment 3B

Report: A Presence – Absence Survey for Kirtland's Snake along the East Springfield-Tangy Transmission Lines in Clark County, Ohio (October 2017)

Final Report: A Presence – Absence Survey for Kirtland's Snake along the East Springfield-Tangy Transmission Lines in Clark County, Ohio.

Submitted to:
Kristin S. Susick
Supervisor, Energy Delivery Support
Environmental Department
First Energy Corp.

28 October 2017

Jeffrey G. Davis
ODNR Approved Herpetologist
USFWS Massasauga Permit Holder
625 Crescent Road
Hamilton, Ohio 45013
E-mail: ohiofrogs@gmail.com
(513) 470-8748

Introduction

This report includes the results of a Presence – Absence Survey for Kirtland's Snake (*Clonophis kirtlandii*; Figure 1) along a segment of the East Springfield-Tangy Transmission Line between Baldwin Lane and Buck Creek in Clark County, Ohio (Figure 2). The Survey was conducted at the request of First Energy Corp. as the result of a Habitat Survey performed on February 17, 2017. Six of six parameters used to assess the suitability of habitat for Kirtland's Snakes were identified during the Habitat Survey ranking it as providing high quality habitat.

1.0 Site Description

The site on which the Presence – Absence Survey was conducted is located west of Baldwin Lane and east of Buck Creek. A pair of transmission line poles located at approximately 39.99879°N -83.70121°W are situated at the edge of an agricultural field adjacent to property owned by the U.S. Army Corps of Engineers, leased to the state, and managed by Buck Creek State Park. The latter will hereafter be referred to as "state property". An area under and around the transmission line poles approximately 15 meters wide and 30 meters long and the adjacent fence row were not planted in row crops in previous years. Again, in 2017, the area was left fallow while the field to the north was planted in soy beans. Immediately south of, and contiguous with, the fallow portion of the field, the state property is a mix of open-canopy field dominated by grasses, goldenrods, and other forbs and early successional forest. The right of way (ROW) under the existing First Energy transmission lines has an open canopy that extends south approximately one-half mile to Grant Road. The entire area is in the Buck Creek flood plain and the soils are Lippincott silty clay loam and Sovonna silt loam. The former is associated with Kirtland's Snake habitat in neighboring Champaign County.

2.0 Kirtland's Snake Natural History

Kirtland's Snake typically inhabits low wet fields, abandoned city lots, and even unkempt urban areas where there is abundant trash under which they can take cover. The common characteristic in each of these is sufficient moisture to provide abundant

earthworms and slugs, the mainstay of their diet. Standing water is not necessary and is seldom entered by the snakes, despite being a watersnake. Hibernation takes place in crayfish burrows that allow them to avoid subfreezing winter temperatures. Crayfish burrows are always present where the species is found and when they are found in early spring, they often have a coat of mud covering them, suggesting they had recently emerged from a burrow.

The species is rarely seen moving at the surface and is usually found under cover objects such as rocks, logs, boards, and debris such as old carpet, cardboard, etc. During dry periods, they become inactive and apparently retreat underground. Mating takes place in May and 5 to 10 offspring are born alive from late July through August.

3.0 METHODS

The procedure utilized in this Habitat Survey is that which is recommended by the Ohio Division of Wildlife.

3.1 Coverboards

Seventy-five coverboards (2 ft. x 5.5 ft. corrugated roofing tin) were placed on the ground at the survey site on April 20, 2017. Coverboards are used by snakes for thermoregulation and as refugia. Snakes that have recently eaten, those preparing to shed their skin, and pregnant females are most frequently encountered beneath them. The height of the vegetation surrounding the coverboards and trails between them were maintained with a weed eater at approximately 10–12 inches.

3.2 Site Visits

Weekly site visits were made between April 27 and October 26, 2017 to overturn coverboards to look for Kirtland's Snakes (Table 1). In addition to checking coverboards for snakes, visual searches were conducted as well to look for basking or foraging snakes. All snakes encountered were recorded and their locations were noted as on

state property on the "farm side" of the property line. The farm side of the site included the fence row and the fallow area beneath the transmission line poles.

4.0 Results

4.1 Snake Sightings

No Kirtland's Snakes were found during the Presence – Absence Survey. Three other species were recorded (Table1). Eastern Milksnakes (*Lampropeltis triangulum*; Figure 3) were observed only on the state side of the study area. DeKay's Brownsnakes (*Storeria dekayi*; Figure 4) and Eastern Gartersnakes (*Thamnophis sirtalis*; Figure 5) were found on both the farm side and the state side of the study area. All species were observed on multiple occasions.

4.2 Amphibian Sightings

Northern Leopard Frogs (*Lithobates pipiens*) and American Toads (*Anaxyrus americanus*) were observed frequently at the survey site.

5.0 Recommendations

Upon completion of the Presence – Absence Survey, with no Kirtland's Snakes found in the survey area, **no further consideration regarding Kirtland's Snake at the survey site east of Buck Creek is recommended.**

Figures

Figure 1. An adult Kirtland's Snake (*Clonophis kirtlandii*) from Hamilton County, Ohio.

Figure 2. The survey area, outlined in yellow, straddles the border between an agricultural field to the north and land owned by the U.S. Army Corps of Engineers, leased to the state park system, and managed as part of Buck Creek State Park. The pale blue line is the approximate boundary between the privately owned agricultural land to the north and the state land to the south. The thin white lines show existing transmission lines and the short red line marks the approximate position of the existing pair of transmission line poles.

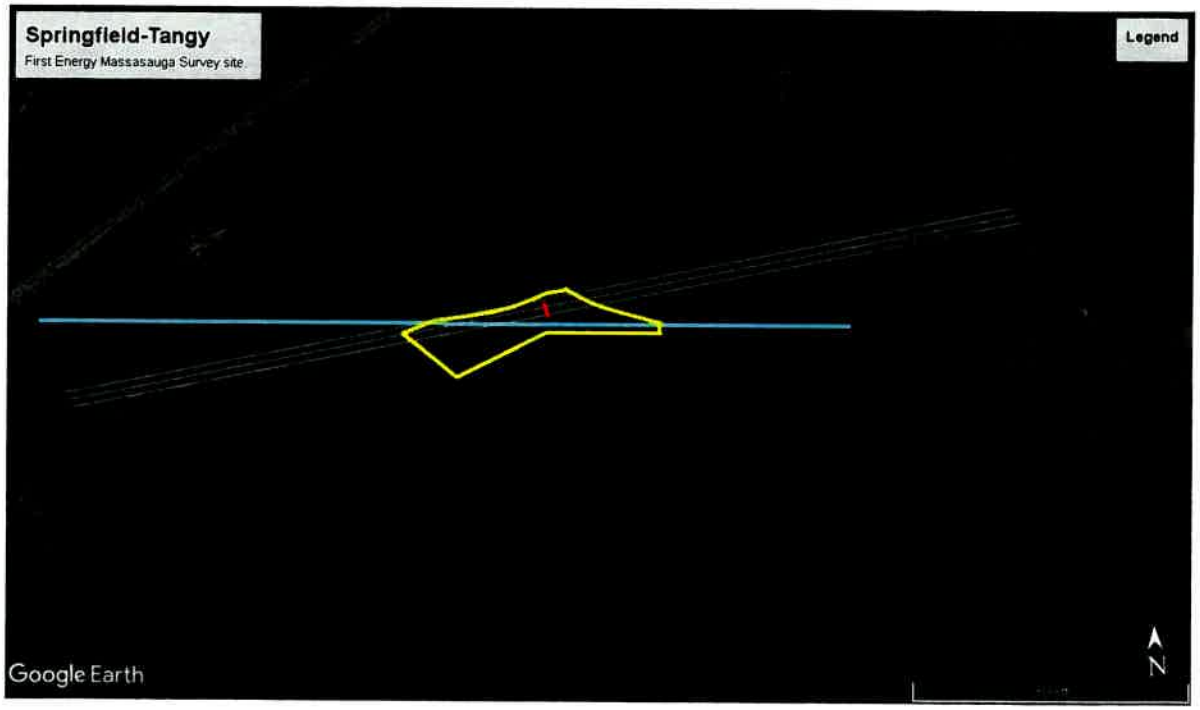

Figure 3. One of the Eastern Milksnakes (*Lampropeltis triangulum*) encountered at the study site.

Figure 4. One of the DeKay's Brownsnakes (*Storeria dekayi*) encountered at the study site.

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July 11						
July 20						
July 25						
August 2						
August 7						
August 15						
August 22						
August 29						
September 3						
September 11						
September 17						
September 25						
October 3						
October 10						
October 19						
October 26						

Attachment 4

Email correspondence from ODNR and Mr. Jeffery Davis

Ruggiero, Augustine (Jirousek, Michael J.)

From: Nathan.Reardon@dnr.state.oh.us
Sent: Tuesday, April 03, 2018 11:36 AM
To: Ruggiero, Augustine (Jirousek, Michael J.)
Cc: 'ohiofrogs@gmail.com'
Subject: [EXTERNAL] Springfield Tangy line

Hello Auggie,

Jeff Davis contacted me about the installation of a pole and guy wire on the Springfield Tangy line in Clark County. If the work will be conducted between January and March, and there will be no impacts to the ditch bottom, no further coordination is recommended. However, if the work is conducted outside of the January through March period, or if impacts to the ditch are proposed, the DOW recommends that Jeff (or other approved herpetologist) be on site during the activity. If you have any questions, please feel free to contact me.

Thank you,
Nathan

Nathan Reardon
Compliance Coordinator
ODNR - Division of Wildlife
2045 Morse Road, Bldg. G
Columbus, OH 43229-6693
Phone: 614-265-6741
Email: nathan.reardon@dnr.state.oh.us

Ruggiero, Augustine (Jirousek, Michael J.)

From: Jeffrey Davis <ohiofrogs@gmail.com>
Sent: Wednesday, April 25, 2018 2:29 PM
To: Ruggiero, Augustine (Jirousek, Michael J.)
Subject: [EXTERNAL] Re: East Springfield Tangy Mechanicsville Road area

Yes on all accounts.

On Apr 25, 2018 2:22 PM, "Ruggiero, Augustine (Jirousek, Michael J.)" <aruggiero@firstenergycorp.com> wrote:

> Jeff,
>
> Please see attached rough sketch of the proposed access route that will come from the west to get to the guying location on the west side of the stream in the field east of Mechanicsville Road. Per our discussion, it was my understanding that as long as we work in the winter months (and its cold), there shouldn't be an issue with regards to affecting the eastern massasauga but if work occurs in the warmer months (or even in an unseasonably warm February or March), then we'd want to have a trained professional (i.e., you) onsite during construction to make sure no snakes make their way onto the access route. Is this an accurate assessment?
>
> Thanks
>
> Auggie

Summary: Application for Amendment to the East Springfield - Tangy 138kv Loop to Broadview Substation (Part 2 of 4) electronically filed by Mr. Robert J Schmidt on behalf of American Transmission Systems Inc.