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INHS TECHNICAL REPORT

Conservation Plan for the Blanding's Turtle, *Emydoidea blandingii*, during the replacement of the W 78.0 Freeport Bridge in Winnebago County, Illinois

IDNR Project No.: 1506840

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June 2016

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1. INTRODUCTION

The following Conservation Plan was developed in accordance with Title 17 of the Illinois Administrative Code, Chapter 1, Part 1080.10 Incidental Taking of Endangered or Threatened Species: Conservation Plan. This plan will be implemented for replacement of the Chicago, Central & Pacific Railroad Company (CCP) W 78.0 Freeport Bridge over a former channel of the Kishwaukee River in Winnebago County, Illinois. The purpose of the project is to replace a ballast deck timber trestle with a precast concrete ballast deck supported on steel H-piles. This replacement is necessary to prevent degradation of rail corridor efficiency and to reduce the likelihood of structure failure. Blanding's Turtle, *Emydoidea blandingii,* are protected under the Illinois Endangered Species Protection Act and are known to occur in the vicinity of the structure.

2. DESCRIPTION OF IMPACT

2.1 PROJECT LOCATION AND DESCRIPTION

The project is located in Section 11, Township 43 North and Range 2 East of the Cherry Valley Illinois 7.5 Minute Quadrangle at coordinates latitude 42.21261 longitude 88.96167 (WGS 84) in Winnebago County, Illinois (**Figure 1**). The project location is a right of way of the CCP that passes over an oxbow lake historically formed by the Kishwaukee River within the Deer Run Forest Preserve property managed by the Winnebago County Forest Preserve District (informally known as the Forest Preserves of Winnebago County or FPWC). In addition to the W 78.0 Bridge proper, activities will occur at a staging area due east of the bridge.

2.2 BIOLOGICAL DATA

There is one Element Occurrence Record in the IDNR Natural Heritage database consisting of eight observations of Blanding's Turtles within 1 mile of the Freeport W 78.0 Railway Bridge (**Figure 2**). The most recent observation was on 30 June 2015 during a pre-construction Blanding's Turtle population survey at the site (Kuhns 2015). The report detailing the pre-construction survey has been submitted with this document as an appendix. In summary, no Blanding's Turtles were captured in 52 trap nights of sampling. However, one adult Blanding's Turtle was observed approximately 600 meters south-southwest of the impact area.

The Blanding's Turtle was originally described based on a specimen collected by William Blanding from the Fox River, in Camden (now called Millbrook), Kendall County, Illinois (Holbrook 1838). The Blanding's Turtle is distinguishable from other North American turtle species by the presence of a hinged plastron coupled with a bright yellow chin and throat (Ernst et al. 1994). Within Illinois, *E. blandingii* was historically present in the extensive marsh systems of the northern half of the state (Kennicott 1855). Since 1832, it has been documented in 32 of Illinois' 102 counties. However, due primarily to habitat loss and fragmentation, the species is currently listed as endangered in Illinois (Illinois Endangered Species Protection Board 2015; Mankowski 2012).

Throughout their range, *E. blandingii* occupy eutrophic habitats with clear water and abundant aquatic vegetation with adjacent uplands available for nesting (Ernst et al. 1994). Typical Blanding's Turtle sites in northern Illinois are a mosaic of multiple wetland types interspersed in a prairie or savanna landscape (Kuhns et al. 2007). Blanding's Turtles are not great swimmers and typically prefer shallow wetlands with little to no discernable water flow. They are long-lived; wild-caught individuals over 77 years of age

have been documented in the field (Congdon et al. 2001). Females typically mature between 14 and 20 years of age (Congdon et al. 1983; Ross 1989). Mature females lay only one clutch of eggs per year but may not nest annually. Females can travel considerable distances (up to 1.6 km.) from their activity areas to nest (Congdon et al. 1983; Ross and Anderson 1990; Joyal et al. 2001; Kuhns et al. 2007). In northern Illinois nesting typically occurs from mid-June to mid-July (Kuhns et al. 2007). Nests of up to 19 eggs are laid in sand or sandy loam soils with good drainage and low canopy cover (Ross and Anderson 1990**;** Kuhns et al. 2007). Blanding's turtles in northern Illinois are active from late March through October (Rowe and Moll 1991; Kuhns et al. 2007). Radio-telemetry data from northeastern Illinois indicate that Blanding's Turtles moved an average straight line distance of 18 to 23 meters per day (Kuhns et al. 2007). Annual home range size is highly variable depending on individuals but in northern Illinois averaged 8.5 Ha to 11 Ha (Kuhns et al. 2007). The greatest trapping success in northern Illinois occurs from May through mid-July (Benda et al. 2007, Kuhns et al. 2007).

2.3 ACTIVITIES THAT WILL RESULT IN TAKE

This work will consist of the removal and replacement of the existing bridge structure, construction of a temporary structure to facilitate construction, minor earthwork for abutment improvement and stabilization, and removal of the temporary structure. Proposed actions include driving approximately 45 permanent (30 in existing suitable habitat) and 32 temporary steel H piles (all in existing suitable habitat) into the substrate of the oxbow. Each H pile is 13.83" by 14.695" and will occupy 1.41 square feet. The current embankment will be widened by 25' for the placement of a temporary structure from which to work on the existing bridge. Additionally, a 50 foot by 100 foot staging area will be cleared for material and equipment storage (**Figure 3**). The current habitat at the proposed embankment and staging area consists of rip rap and dense shrubby understory growth, neither of which are suitable habitat for Blanding's Turtles. Adjacent to the areas of unsuitable habitat is native grass prairie and the oxbow, both of which are suitable habitat. Temporary impacts to existing suitable habitat will result from a portion of the temporary material storage area, an area adjacent to the temporary bridge needed to access the temporary bridge, and temporary H piles for the temporary bridge. These temporary impacts to suitable habitat will result in a total combined area of 860 square feet or 0.020 acres (**Figure 4**). Fills associated with these areas will be completely removed upon completion of the Project and the areas will be restored to a high quality native planted grass prairie for the grassed area and preconstruction conditions for the oxbow. Permanent impacts to existing suitable habitat will result from driving the permanent steel H pile supports for the new bridge. These permanent impacts to suitable habitat will result in a total combined area of 50 square feet or 0.001 acres (**Figure 4**). Therefore, **the combined temporary and permanent impacts to suitable habitat will be 910 square feet or 0.021 acres**. Note all impact areas have been rounded up to the nearest 10 square feet for reporting and mitigation calculation purposes. Impacts to the Blanding's Turtle are not anticipated but the possibility of up to 1 individual being taken is acknowledged. The project is slated to begin in fall 2016 and should take 4 to 6 months to complete.

2.4 ADVERSE EFFECTS ON LISTED SPECIES

Localized effects on the Blanding's Turtle population at this site may result from the relocation of an individual away from the construction zone. Other potential methods of take in this project include the possibility that a Blanding's Turtle may be crushed by heavy equipment if it (1) manages to circumvent the exclusionary silt fence and (2) goes undetected by construction personnel. Additionally, take may come in the form of inadvertent harassment of turtles. For example, the presence of construction

personnel and higher amount of activity at the construction site, may preclude Blanding's Turtles from basking in the area, or cause them to move away from the construction zone. However, these potential impacts will be localized and no adverse effect on the state population of Blanding's Turtles is anticipated.

3. MINIMIZATION AND MITIGATION MEASURES

3.1 MINIMIZATION OF AREA AND INDIVIDUALS

Work will be limited to the existing developed right of way directly adjacent to the current bridge and an upland area near the embankment and wooded edge. Current habitat at the embankment primarily consists of rip-rap along a dense shrubby understory, neither of which are suitable habitat for the Blanding's Turtle. The construction zone and staging area will be fenced to prevent silt from entering the wetland and obstruct Blanding's Turtles from entering the construction zone. Silt fencing will be buried a minimum of 12" into the substrate and extending 20" above the surface of the substrate before any work begins at the site. The silt fence will pass under the railway bridge and then extend along the right of way in three of the quadrants. In the southeast quadrant, the silt fence will encompass the staging area and terminate at the rip-rap along the right of way (**Figure 3**).

Access to and from the site for all equipment, material, and construction personnel will be via the existing railroad tracks. Access in this manner, as opposed to using the existing preserve access trails, will significantly reduce the likelihood of "take" occurring since the existing trails bisect a significantly larger portion of the preserve that separate the oxbow from agricultural fields to the east, which is a potential nesting habitat. This will also decrease the likelihood of "take" since the existing railroad tracks are not suitable habitat.

In the unanticipated event that a vehicle must access the site that cannot travel by rail, the vehicle would be escorted by either CCP or FPWC staff, on foot, walking in front of the vehicle to visually clear the trail for Blanding's Turtles. Access by any vehicles utilizing the forest preserve trails would be coordinated in advance with FPWC.

3.2 MANAGEMENT OF AFFECTED AREA

There is no long-term modification of habitat in this project. CCP will remove all temporary fill, the temporary bridge, clean up all construction debris, and re-grade the site to pre-construction contours. CCP will assist the FPWC staff with the restoration/planting of the existing suitable habitat using seed provided by FPWC. The habitat will continue to be managed and maintained by the FPWC as public land during and after the construction. CCP will provide $9,425 to FPWC for seeding of the disturbed suitable habitat with a high quality, native prairie seed mix and for the management and monitoring of the Blanding's Turtle population in Deer Run Forest Preserve.

3.3 DESCRIPTION OF MINIMIZATION AND MITIGATION MEASURES

Minimization:

The current timber decked bridge will be disassembled piece by piece and removed from the site to prevent the material from falling into the wetland and marring the habitat or injuring wildlife. Silt fences will be installed around the construction zone by CCP in coordination with FPWC. Silt fences will

minimize the impact of the construction on Blanding's Turtles in two ways. Not only will they prevent siltation into the oxbow pool, but they will also act as barriers preventing turtles from entering the terrestrial construction zone. The wetland under the bridge will continue to be open to allow passage of animals beneath the bridge but the silt fences will pass under the bridge preventing turtles from entering the construction zones from the water.

Construction workers will be instructed on how to identify Blanding's Turtles by CCP personnel and will continuously monitor the construction zone for the Blanding's Turtle. An identification sheet for Blanding's Turtles will be included in the construction plans with contact information for FPWC, and this information will also be posted at the construction site (**Figure 5**). If a Blanding's Turtle is observed in the construction zone, CCP will notify FPWC staff immediately, and FPWC will relocate the individual.

Mitigation:

Mitigation of the site will be provided in the following ways:

The unsuitable habitat portion of the construction material storage area will be converted to suitable habitat. This area currently consists of shrubby and invasive vegetation and is a source of invasive and non-native species penetrating into the preserve. This area will be converted from unsuitable habitat to suitable habitat for the existing Blanding's Turtle population by converting this habitat to native short-grass prairie post-construction. This will result in a gain of 3,150 square feet or 0.072 acres of suitable habitat for Blanding's Turtles at the site (**Figure 6**). This will be accomplished by clearing the shrubby area utilizing labor provided by CCP (valued at approximately $3,500) and planting the area utilizing labor and seed provided by FPWC. FPWC will also provide maintenance on this area. CCP will provide $600 to FPWC for seeding and maintenance of this area.

Additionally, CCP will provide a donation of $5,500 to FPWC to be used to purchase tracking equipment for the Blanding's Turtle population within the Preserve to aid the FPWC in monitoring of habitat use and research of the local Blanding's Turtle population. The use of this equipment will allow FPWC to better understand the local population density and range patterns, which would increase the effectiveness of future habitat enhancement Projects and species avoidance during routine Preserve operations and events. Approximately $3,500 of the donation will be used for the purchase of the equipment. The remaining $2,000 would be used to purchase and erect additional interpretative and education site/trail signage related to the population research and habitat area.

Based on information provided by FPWC, typical costs associated with the initial conversion of unsuitable habitat to suitable habitat is approximately $3,500 to $4,000 per acre using FPWC labor and equipment. There is an additional cost of $1,000 to $1,500 in maintenance costs per acre to cover items such growth monitoring, prescribed burning, herbicide treatment and mowing of invasive species and supplemental plantings. Based on this information a total anticipated cost of converting an acre of unsuitable habitat to suitable habitat including direct and indirect costs would be $4,500 to $5,500 per acre for FPWC.

A land value of recreational, non-prime agricultural land was determined to be approximately $8,500 per acre based on local real-estate information. Therefore, the value of the donation is approximately equivalent to the purchase and habitation conversion of 0.393 acres of land at a cost of $14,000 ($5,500 + $8,500) per acre. Since this Project will result in the combined temporary and permanent impacts to

suitable habitat of 0.021 acres and will provide a net gain of suitable habitat of 0.072 acres and an equivalent monetary donation of 0.393 acres; the resultant mitigation ratio is approximately 22:1.

3.4 MONITORING PLANS

A survey for Blanding's Turtle was conducted before the development of this Conservation Plan and is attached. Before and during the placement of silt-fences, FPWC staff will verify that Blanding's Turtles are not within the construction zone. FPWC will also conduct surveys of the construction zone during CCP mobilization into the worksite approximately two weeks after silt-fence installation. During construction, the site will be continuously monitored for the presence of Blanding's Turtle by construction personnel, and intermittently inspected and monitored by FPWC staff. Because the project area right of way passes through Deer Run Forest Preserve, basic habitat monitoring occurs and will continue to occur at this site by FPWC personnel post-construction. FPWC will provide follow-up monitoring of the construction zone on a monthly basis and provide quarterly or yearly findings to CCP. CCP will then compile the reports and submit them to the Illinois Department of Natural Resources (IDNR) yearly for two years following the completion of construction.

3.5 ADAPTIVE MANAGEMENT ASSURANCES

In addition to vigilance by construction personnel for the presence of the Blanding's Turtle, FPWC staff will intermittently inspect (weekly or more frequently) the exclusion/silt-fences and verify the effectiveness of control techniques. CCP will remedy any deficiencies in the wildlife control/silt-fences within one day of being notified by WFPD. If it is determined that initial control techniques are inadequate to protect listed species from take, techniques will be re-evaluated, and applicable new or additional techniques may be implemented to ensure adequate protection of listed species.

3.6 FUNDING ASSURANCES

CCP will be responsible for establishing and managing the financial assurance of the restoration, monitoring and mitigation of the project area. CCP will provide a one-time, lump sum payment in full in the amount of $15,525 ($9,425 for restoration and monitoring and $6,100 in mitigation) to FPWC to cover restoration management, monitoring and mitigation measures. This payment will be made prior to the start of construction.

4. ALTERNATIVE ACTIONS

4.1 NO ACTION

A No Action plan would have temporarily eliminated impacts to the species and habitat; however, failure to improve and/or replace the existing structure would have resulted in degradation of the rail corridor as a result of speed restrictions, a higher rate of service outages and reduced traffic capacity. Additionally, the likelihood of structure failure would have increased. Eliminating action on the structure at this time would likely only delay the eventual structure replacement and the resulting impacts on the species and habitat.

4.2 ALTERNATIVES TO CHOSEN PLAN

A structure repair option was evaluated. This would have consisted of carefully removing and replacing the structure components deemed to be non-serviceable and/or in damaged condition. This option may have reduced costs and construction timelines, but would have resulted in the same impacts to the site

as a complete replacement (i.e. temporary structure, driving temporary/permanent support piles, etc.). Additionally, this action would have only delayed the eventual replacement of the existing timber structure with a new composite (steel and concrete) structure resulting in multiple future impacts within the service life of a comparable new structure. This option was abandoned because delaying complete replacement increases life cycle costs and results in increased impacts to the species and habitat.

The use of a culvert series was evaluated to replace the existing bridge structure. This option would have consisted of placing large pipe or box culverts between the existing bridge spans and filling the remaining open area. This option may have reduced costs and construction timelines, but would have significantly increased the impact on the habitat and wetlands. This option was abandoned due to the increased impact to suitable habitat and increased wetland impacts.

5. ASSESSMENT OF TAKE

Since 2000, Blanding's Turtles have been documented from 19 counties in Illinois. In an assessment of Blanding's Turtle populations in Illinois, King (2013) classified known populations of Blanding's Turtles into Ranks of 1 to 4, with a rank of 1 being given to;

> "…sites with frequent records of Blanding's Turtles since 1980. Locations with 10 or more Blanding's Turtle records since 1980, or with annual Blanding's turtle records in six or more years since 1980. (King 2013)"

Twenty-eight sites in Illinois were given Rank 1 status, i.e. the highest priority for conservation of Blanding's Turtles in the state. The population in Deer Run Forest Preserve was given Rank 2 status indicating that there were infrequent records, having nine or fewer records in four or fewer years since 1980. While it was noted these ranks are not definitive, as some R2 sites may have persisting populations, it was equally as likely that no reproductive population remained and only lone individuals were infrequently encountered at these sites. Regardless, this analysis does indicate that this project will not negatively impact the species in the state of Illinois in the off chance that take occurs, given that there are approximately 28 other populations of higher perceived conservation value.

6. IMPLEMENTING AGREEMENT

6.1 RESPONSIBILITIES AND SCHEDULES

This Conservation Plan will be implemented by the following parties:

Chicago, Central & Pacific Railroad Company (CCP)
Winnebago County Forest Preserve District (FPWC)

Implementation Schedule and Responsibilities by party:

<u>Pre-construction (Fall 2016)</u>

CCP: Will coordinate exact construction schedule with FPWC and install silt fences and ensure that all construction staff are trained in the identification of Blanding's Turtles.

FPWC: Will coordinate the exact construction schedule with CCP, inspect the construction zone for Blanding's Turtles immediately before and after placement of silt fences, and inspect adequacy of silt fences to ensure there are no openings.

<u>During Construction: Fall 2016 through Spring 2017 (anticipated)</u>

CCP: Will continuously monitor the construction zone for the presence of Blanding's Turtles, report any Blanding's Turtle observations to FPWC staff, and maintain site controls and repair/replace silt fences as required.

FPWC: Will intermittently (weekly to bi-weekly) monitor the construction zone for adequacy of silt fences and the presence of Blanding's Turtles, identify and discuss any issues with silt fences to CCP and remove and relocate any Blanding's Turtles observed by CCP staff.

<u>Post-construction: by the end of Spring 2017 (anticipated)</u>

CCP: Will remove all temporary fill and the temporary bridge, clean up all construction debris, re-grade the construction zone to pre-construction contours, and seed and straw mulch the construction zone and staging area with a seed mix provided by FPWC. CCP will remove all silt fences after all other work is complete.

FPWC: Will provide CCP with seed to restore work zone to native non-invasive vegetation and perform any additional work/habitat enhancement required by the Forest Preserve.

<u>Post-construction: remainder of 2017 through 2019</u>

CCP: Will compile and submit the FPWC reports on follow-up monitoring to IDNR annually for the duration (2 years) of monitoring.

FPWC: Will provide monthly follow-up monitoring of the site documenting the habitat restoration and any presence of the Blanding's Turtle and report these findings annually to CCP. FPWC will continue this monitoring for the duration (2 years) of monitoring.

6.2 CERTIFICATION

CCP is the legal Owner of the existing rail infrastructure to be improved and the railroad right-of-way at the Project location. FPWC is the legal Owner and custodian of the Deer Run Forest Preserve and is permitted to work on threatened and endangered species.

Chicago, Central & Pacific Railroad Company

Signature: Alan S Crane

Printed Name: ALAN S CRANE

Printed Title: SR MANAGER STRUCTURES

Date: AUGUST 4, 2016

Winnebago County Forest Preserve District

Signature: Vaughn W. Stamm

Printed Name: VAUGHN W. STAMM

Printed Title: DIRECTOR OF PRESERVE OPERATIONS

Date: AUGUST 15, 2016

6.3 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

CCP's environmental policies and procedures comply with applicable state and federal requirements. CCP promotes sustainable operations and infrastructure, and is committed to limiting environmental impacts to the extent practical.

FPWC is dedicated to protecting, conserving, enhancing and promoting Winnebago County's natural heritage for the environmental, educational, and recreational benefit of present and future generations.

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8. SUPPLEMENTAL MATERIALS

Figure 1. Location of the Freeport W 78.0 Railway Bridge scheduled for replacement.

Figure 2. Element Occurrence Record (EOID 7420) locations for Blanding's Turtle within one mile of the Freeport W 78.0 bridge (IDNR Project No. 1506840) in Winnebago County, Illinois. The bridge is shown in red.

Figure 3. Locations of temporary causeway/bridge and staging area to be used for temporary storage

Figure 4. Habitat Impact Site Exhibit

Figure 5. Blanding's Turtle Identification Sheet

Figure 6. Habitat Restoration Site Exhibit

Attached. Survey for Blanding's Turtle, *Emydoidea blandingii*, in Deer Run Forest Preserve, Winnebago County, Illinois.

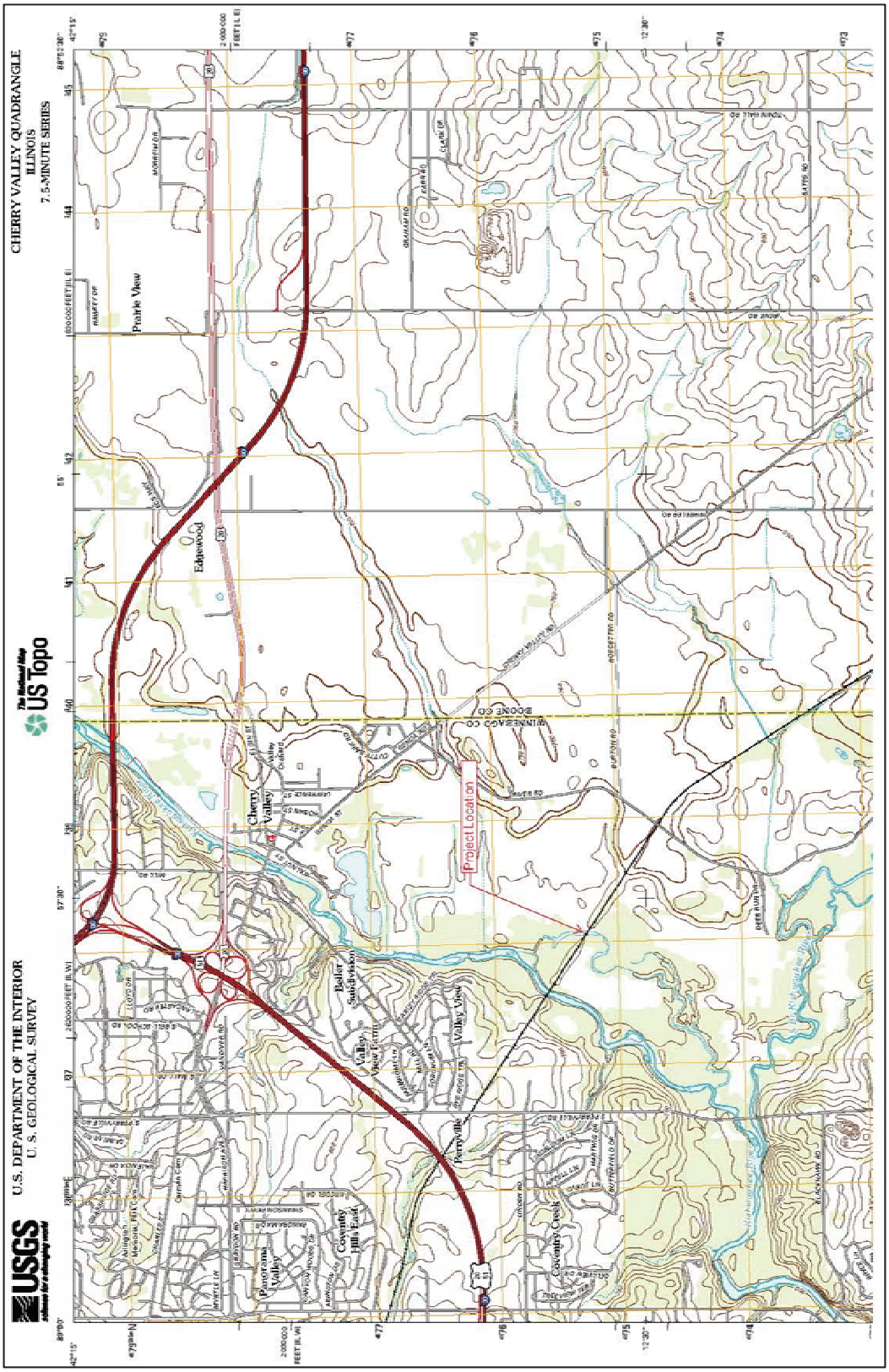

Figure 1. Location of the Freeport W 78.0 Railway Bridge scheduled for replacement.

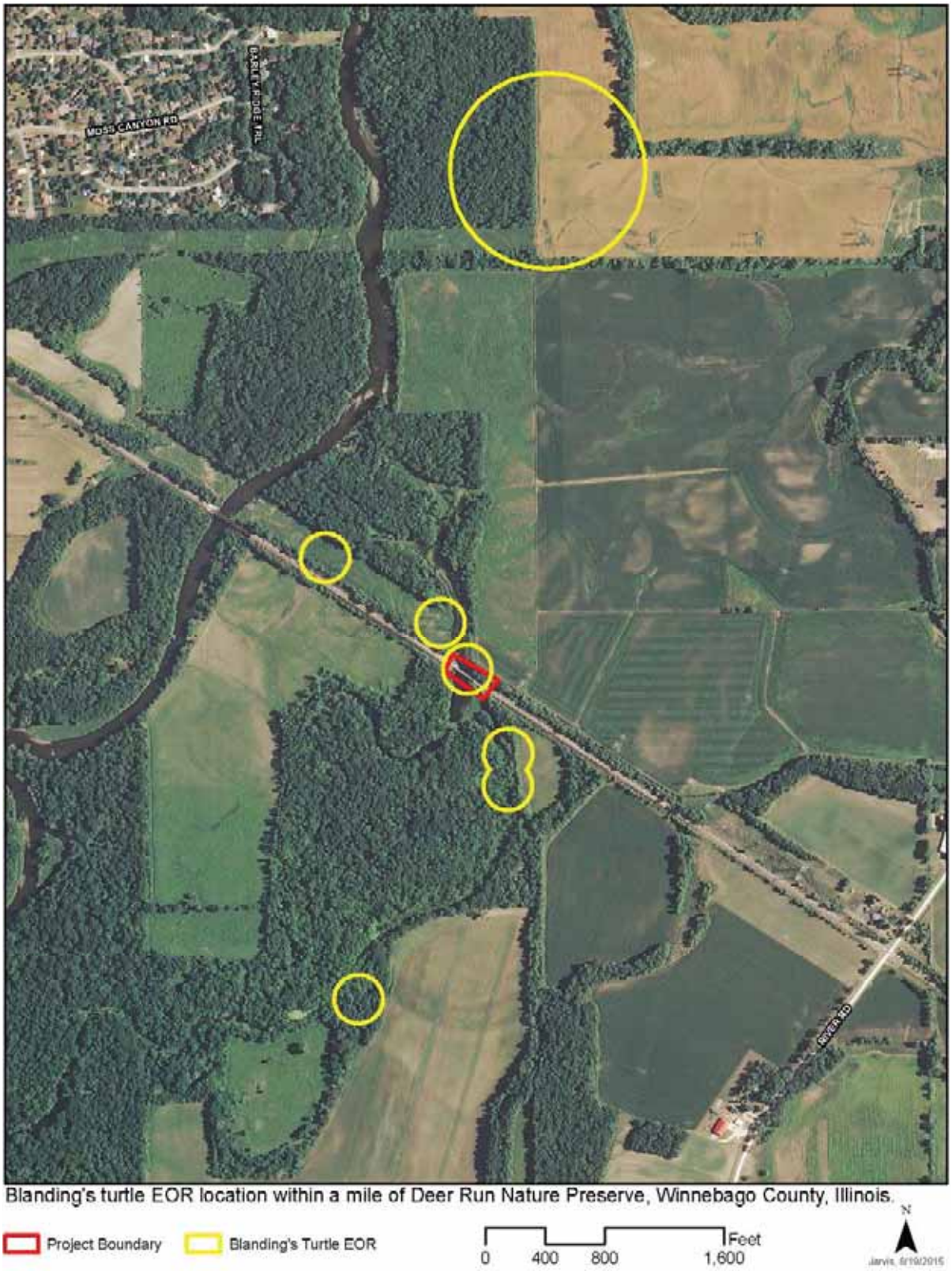

Figure 2. Element Occurrence Record (EOID 7420) locations for Blanding's Turtle within one mile of the Freeport W 78.0 bridge (IDNR Project No. 1506840) in Winnebago County, Illinois. The bridge is shown in red.

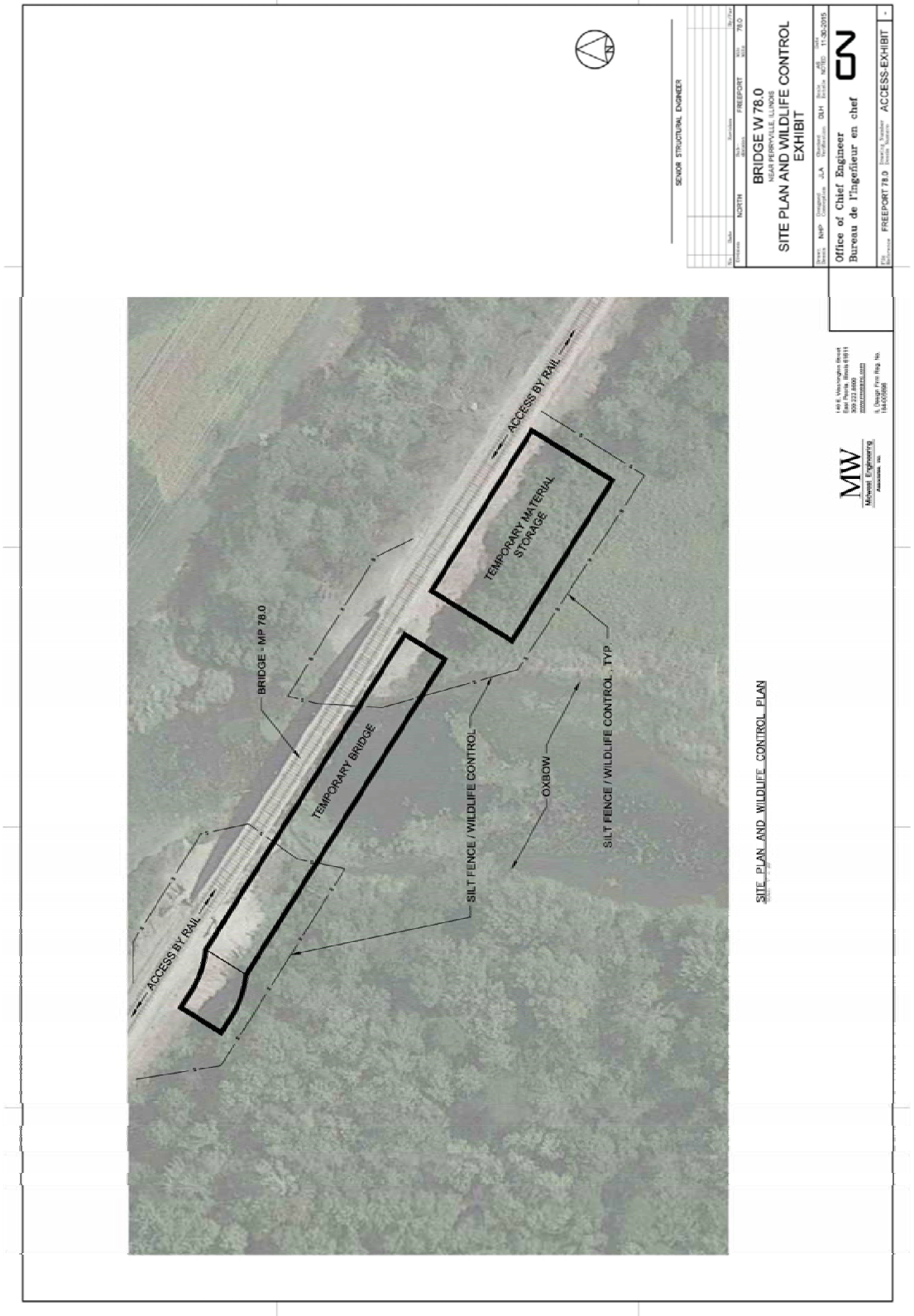

Figure 3. Locations of temporary bridge, staging area to be used for temporary storage, and access route to the construction zone.

Figure 4. Habitat Impact Site Exhibit

ATTENTION

The state endangered Blanding's Turtle occurs at this site.

If you see a Blanding's Turtle, immediately contact

Winnebago County Forest Preserves

815.877.6100

Their staff will come move the turtle to safety.

How to identify a Blanding's Turtle:

1. Yellow chin and neck
2. Brown/black shell
3. Yellow flecks on shell (usually)

DO NOT HANDLE, MOVE, MOLEST OR HARM THE TURTLE.

Figure 5. Blanding's Turtle Identification Sheet

Figure 6. Habitat Restoration Site Exhibit

9. APPENDIX – PRE-CONSTRUCTION SURVEY

INHS TECHNICAL REPORT

Survey for Blanding's Turtle, *Emydoidea blandingii*, in Deer Run Forest Preserve, Winnebago County, Illinois

IDNR Project No.: 1506840

Prepared by:
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East Peoria, IL 61611

INHS Technical Report 2015 (22)
03 September 2015

PRAIRIE RESEARCH INSTITUTE
Mark R. Ryan, Executive Director

ILLINOIS NATURAL HISTORY SURVEY
Geoff Levin, Interim Director

PROJECT SUMMARY

This report details results of herpetological surveys for the Blanding's Turtle, *Emydoidea blandingii*, in Deer Run Forest Preserve, Winnebago County Illinois. The Central Chicago & Pacific Railroad Company intends to replace a rail bridge over an oxbow of the Kishwaukee River within the preserve. The Blanding's Turtle, is listed as an endangered species by the state of Illinois. Information on the natural history and ecology of the Blanding's Turtle can be found in **Appendix A**. As a first step toward generating an Incidental Take Agreement, Midwest Engineering Associates contracted the Illinois Natural History Survey to conduct pre-construction surveys to obtain biological data on Blanding's Turtles from the site. Surveys were conducted by INHS aquatic ecologist / herpetologist A.R. Kuhns from 30 June through 03 July 2015 under an Illinois Department of Natural Resources Scientific collecting permit to A.R. Kuhns, IDNR State Threatened and Endangered Species Permit 05-11S, and a special use permit from the Winnebago County Forest Preserve District. Survey methods are approved under University of Illinois IACUC protocol 14000. The project corridor and locations of surveys can be seen in **Appendix B** and images of the W 78.0 Freeport Bridge and embankment can be found in **Appendix C**. Trapping throughout Deer Run Forest Preserve for 52 trap nights resulted in four turtle captures (2 Common Snapping Turtles, *Chelydra serpentina*, and one Painted Turtle, *Chrysemys picta*, which was caught twice). Although no Blanding's Turtles were captured in traps, one individual was observed basking on a log on 30 June 2015, approximately 600 meters south-southwest of the W 78.0 Freeport Bridge. Thus, this survey confirmed the continuing occurrence of Blanding's Turtles within the preserve but does not support the possibility of a large, robust population occurring at the site.

Surveys Conducted By: Andrew R. Kuhns, Ecologist / Herpetologist

GIS Layers: Janet L. Jarvis, GIS and Remote Sensing Specialist
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Cover Photo: Blanding's Turtle, *Emydoidea blandingii* observed basking in Deer Run Forest Preserve, Winnebago County, Illinois during this survey on 03 June 2015. Photo by Mike Groves, WCFPD.

INTRODUCTION

The Central Chicago & Pacific Railroad Company Railway Company intends to replace a railway bridge over an oxbow slough of the Kishwaukee River within Deer Run Forest Preserve in Winnebago County, Illinois. This work will consist of the removal and replacement of the existing structure, construction of a temporary structure to facilitate construction, minor earthwork for abutment improvement and stabilization, and removal of the temporary structure. A natural resource review provided by the Illinois Department of Natural Resources (IDNR) Ecological Compliance Assessment Tool (EcoCAT) indicated the Blanding's Turtle was known to occur within the vicinity of the project (**Appendix B. Figure B.1**) and an Incidental Take Authorization (ITA) should be sought through the IDNR's Office of Resource Conservation.

As a first step toward generating an Incidental Take Agreement, Midwest Engineering Associates contracted the Illinois Natural History Survey (INHS) to conduct pre-construction surveys to obtain biological data on Blanding's Turtles from the site. This report details the methods and findings of the pre-construction survey.

PROJECT AREA

The project area occurs in the southeast Quadrant of Section 11 in Township 43 North, Range 02 East of the Cherry Valley Illinois 7.5 minute Quadrangle at coordinates 42.212619° N, -88.961719° W (**Appendix B., Figure B.1**). The Central Chicago & Pacific Railroad Company Railway Company plans to remove the current bridge (**Appendix C; Plates 1-4**), create a temporary structure adjacent to the current bridge, and construct a replacement structure.

METHODS

Database Review

The Illinois Natural Heritage Database maintained by the IDNR was queried for Element Occurrence Records (EOR) of threatened and endangered amphibians and reptiles within a mile of the project boundary. Each EOR may be subdivided into multiple Element of Occurrence Identification numbers (EOID) to record separate identification events or sub-locations. Additionally, searches of both vouchered and un-vouchered specimens in the INHS Amphibian and Reptile Collection, the University of Illinois Museum of Natural History (UIMNH), and non-INHS Illinois Amphibian and Reptile databases maintained by the INHS were conducted. Together these databases are merged and accessed through the All_IL_Herps database at INHS and are updated semi-annually. The locations of any results were plotted onto aerial photographs of the ESR corridor and examined to search for suitable habitat for the species.

Field Surveys

On 30 June 2015, INHS aquatic ecologist A.R. Kuhns examined the project area with Mike Groves, Natural Research Manager with Winnebago County Forest Preserves. Mr. Groves provided

information about the site and suggested sites to trap based on his extensive knowledge of the property.

Traps were set in wetlands that occur around and under the Freeport W 78.0 railway bridge, and coordinates (latitude and longitude in decimal degrees, Map Datum: NAD 83) for all traps were recorded and plotted. Two sizes (12" diameter x 24" L, & 24" diameter x 36" L) of double throated collapsible turtle traps (modified from Legler 1960) were deployed. This allowed trapping of shallow and deeper water while maintaining that a portion of the trap extended above the water surface to prevent captured turtles from drowning. Traps were baited with canned sardines in oil and bait was replaced as necessary. Sixteen traps were set on 30 June 2015, and two additional traps were set on 01 July 2015. Traps were checked daily at which point all captured turtles were identified to species and released at the site of capture. All traps were removed 03 July 2015. Results are presented as the number of individuals captured, as well as the Catch per Unit Effort (CPUE). Trap-nights were used as the unit of effort with one trap set for one night equaling one trap-night. Thus, if two traps were set for three nights, the effort recorded would be six trap-nights. If two Blanding's Turtles were captured in those six trap-nights, the CPUE would equal 0.3333 (2 captures divided by six trap nights). This metric is useful for making general comparisons with other surveys and assessing appropriate effort, when other variables such as detectability and abundance are unknown and when capture yields are low.

RESULTS

Database Review

There is one Element Occurrence Record in the IDNR Natural Heritage database consisting of seven observations of Blanding's Turtles within 1 mile of the Freeport W 78.0 Railway Bridge (**Appendix B, Figure B.1**). The most recent observation came from 07 August 2014. The databases at INHS did not contain any information that was not available in the Natural Heritage Database.

Field Surveys

Nineteen traps were placed in wetlands in areas near EOR locations and in other locations appearing suitable (**Appendix B. Figure B.2**). One trap was destroyed by a Beaver, *Castor canadensis*, the first night of sampling. Excluding that trap, effort for this survey was 52 trap-nights. Trapping density was greatest near the Freeport W 78.0 Bridge (**Figure B.2**.). Two Snapping Turtles were captured and one Painted Turtle was captured twice during sampling (**Table 1**). No Blanding's Turtles were captured. However, while setting traps on 30 June 2015, one Blanding's Turtle was observed and photographed approximately 600 meters south-southwest of the railroad bridge (cover image).

Table 1. Trap locations, Captures per Unit Effort* (CPUE), and turtle captures during surveys for the Freeport W 78.0 Railroad Bridge project in Winnebago County, Illinois.

Trap	Date Set	Date Pulled	Trap Nights	Latitude	Longitude	*Chelydra serpentina*	*Chrysemys picta*	*Emydoidea blandingii*
1	6/30/2015	7/3/2015	3	42.21192	-88.9618	0	0	0
2	6/30/2015	7/3/2015	3	42.21206	-88.9616	0	0	0
3	6/30/2015	7/3/2015	3	42.21247	-88.9616	0	0	0
4	6/30/2015	7/3/2015	3	42.21239	-88.9616	0	0	0
6	6/30/2015	7/3/2015	3	42.21322	-88.9616	0	0	0
7	6/30/2015	7/3/2015	3	42.21349	-88.9616	0	2	0
8	6/30/2015	7/3/2015	3	42.21286	-88.9619	1	0	0
9	6/30/2015	7/3/2015	3	42.21252	-88.9619	0	0	0
10	6/30/2015	7/3/2015	3	42.21587	-88.9617	0	0	0
11	6/30/2015	7/3/2015	3	42.21600	-88.9618	0	0	0
12	6/30/2015	7/3/2015	3	42.21585	-88.9621	1	0	0
13	6/30/2015	7/3/2015	3	42.21596	-88.9623	0	0	0
14	6/30/2015	7/3/2015	3	42.20746	-88.9640	0	0	0
15	6/30/2015	7/3/2015	3	42.20778	-88.9637	0	0	0
16	6/30/2015	7/3/2015	3	42.20611	-88.9673	0	0	0
17	6/30/2015	7/3/2015	3	42.20612	-88.9610	0	0	0
18	7/1/2015	7/3/2015	2	42.20531	-88.9678	0	0	0
19	7/1/2015	7/3/2015	2	42.20503	-88.9680	0	0	0
Totals			**52**			**2**	**2**	**0**
Captures per Unit Effort -CPUE						**0.038**	**0.038**	**0.000**

* Unit effort is trap-night. Thus, a trap that was set for three trap-nights is three trap-nights of effort. Two traps set for three nights is six trap-nights of effort, etc.

DISCUSSION

The wetland directly under the Central Chicago & Pacific Railroad Company Railroad Bridge, known locally as Blue Pool (**Appendix C. Plates 1-4**), is heavily vegetated north of the railroad bridge, deeply silted near shore under the bridge and predominantly open water south of the bridge with shallow sedge meadow habitat along the southeastern shore. The habitat directly under the bridge is of low quality for Blanding's Turtles, but a log jam at the base of the bridge currently provides basking structure. Mike Groves indicated the water in this oxbow originally flowed northwest into the Kishwaukee River but that the confluence was dammed, and the water is now governed by water control structures to flow south through the preserve. This change has resulted in suitable habitat in the wetlands to the south of "Blue Pool" where the Blanding's Turtle was observed on 30 June 2015.

Blanding's Turtles typically prefer shallow well-vegetated wetlands but may travel to larger more permanent bodies of water during drought or to overwinter. While the habitat under the bridge does not currently appear to be ideal for Blanding's Turtle, EOR locations both north and south of the bridge suggest there may be movement of individuals under the bridge. Suitable habitat does remain at Deer Run Forest Preserve, primarily south of the project area. Additionally, depredated turtle nests were observed along the railroad embankment during trapping surveys (**Appendix C. Plate 5**). Neither the species of turtle nor the nest predator, could be determined based on observation of the nests.

One Blanding's Turtle was observed during this survey. Despite the observation that indicates the continued presence of the species at the site, no individuals were captured in 52 trap-nights of sampling. This is in contrast to concurrent sampling by Lake County Forest Preserve personnel from 28 June 2015 through 02 July 2015 of a known Blanding's Turtle population. Wildlife Biologist Gary Glowacki oversaw extensive trapping for 220 trap nights from 28 June through 02 July 2015 and captured 23 Blanding's Turtles (CPUE = 0.104), 12 Painted Turtles (CPUE = 0.0545), and 14 Snapping Turtles (CPUE = 0.0636; G. Glowacki, unpublished data). The overall Blanding's Turtle CPUE of the Lake County site from 2004 through 2015 was 0.0568 (Glowacki, unpublished data). As seasonal and environmental conditions were similar at the two sites during these nearly concurrent sampling sessions, this disparity in capture success may be due to differences in population size between the two preserves. A study conducted from 2004 through 2010 at the Lake County site generated a population estimate of 130 – 176 individuals (Kuhns 2010). Were all things equal between the two sites, sampling effort at Deer Run should have resulted in the capture of 3 to 5 Blanding's Turtles.

ACKNOWLEDGEMENTS

Winnebago County Forest Preserve District employees were more than generous with their time and effort in conducting this survey. Kristine Knapp assisted in obtaining the necessary permit to conduct work at Deer Run; Mike Groves assisted in setting and checking traps, suggested sampling sites based upon his knowledge of the site and its history, and shared his photographs of the Blanding's Turtle when the zoom of the authors camera was not up to the challenge; Eric Bednar and John Peterson also assisted with checking traps and provided additional information on turtle locations, and suggested an additional site to sample on 01 July. Josh Auxier, of Midwest Engineering Associates, Inc. provided information on the bridge project, and Janet Jarvis mapped the EOR locations in Figure B.1.

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Appendix A.

Natural History of the Blanding's Turtle, *Emydoidea blandingii*, Listed as Endangered in the State of Illinois.

SYNOPSIS

This appendix contains information on the Blanding's Turtle, *Emydoidea blandingii*, listed as an endangered species in the State of Illinois and a species that occurs in the vicinity of the W 78.0 Freeport Bridge project area. The species account includes: diagnostic characters, range in Illinois, habitat requirements, spatial ecology and activity, reproduction, and the suitable sampling season in Illinois. Standard and scientific names follow Crother (2012).

The species range map was created by Ethan J. Kessler and updated by A.R. Kuhns. Maps were based upon data in the Illinois Natural History Survey's All_IL_Herps Database which contains records of vouchered and un-vouchered specimens in the Illinois Natural History Survey (INHS), University of Illinois Museum of Natural History (UIMNH), and amphibian and reptile specimens from ~30 other scientific museums. The database is maintained by INHS/UIMNH Amphibian and Reptile Curator, Christopher A. Phillips, with records from other institutions updated annually.

LITERATURE CITED

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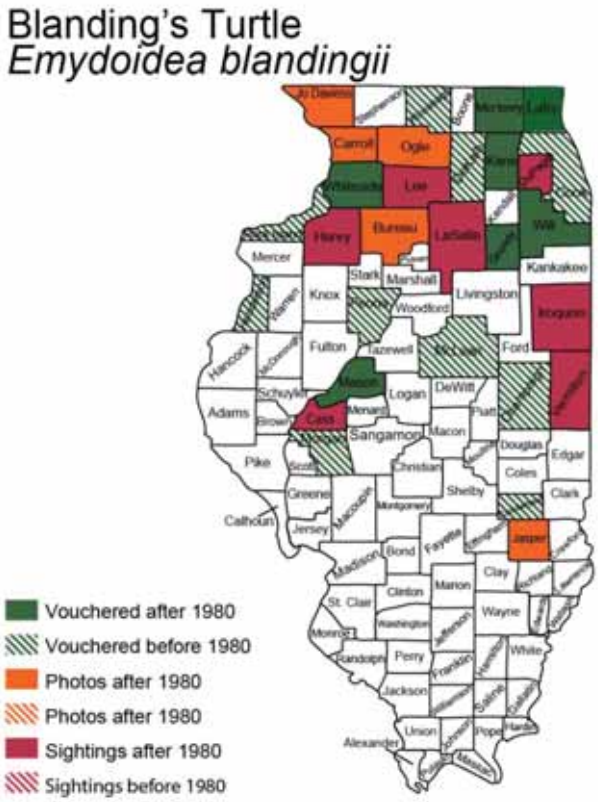
BLANDING'S TURTLE, *EMYDOIDEA BLANDINGII*

General Description for Identification: The Blanding's Turtle is distinguishable from other North American turtle species by the presence of a hinged plastron coupled with a bright yellow chin and throat (Ernst et al. 1994).

Range:
Within Illinois, *E. blandingii* was historically present in the extensive marsh systems of the northern half of the state (Kennicott 1855).

Suitable Habitat: Throughout their range, *E. blandingii* occupy eutrophic habitats with clear water and abundant aquatic vegetation with adjacent uplands available for nesting (Ernst et al. 1994). Typical Blanding's Turtle sites in northeastern Illinois are a mosaic of multiple wetland types interspersed in a prairie or savanna landscape (Kuhns et al 2007). Blanding's Turtles are not great swimmers and typically prefer shallow wetlands with little to no discernable water flow.



Reproduction: Blanding's Turtles are long lived, with wild-caught individuals over 77 years of age having been documented in the field (Congdon et al. 2001). Females typically mature between

14 and 20 years of age (Congdon et al. 1983; Ross 1989). Mature females lay only one clutch of eggs per year but may not nest annually. Nests of up to 19 eggs are laid in sand or sandy loam soils with good drainage and low canopy cover (Ross and Anderson 1990**;** Kuhns et al. 2007).

Spatial ecology and activity: Blanding's turtles in northern Illinois are active from late March through October (Rowe and Moll 1991; Kuhns et al. 2007). Females can travel considerable distances (up to 1 mi.) from their activity areas to nest (Congdon et al. 1983; Ross and Anderson 1990; Joyal et al. 2001; Kuhns et al. 2007). Radio-telemetry data from northeastern Illinois indicate that Blanding's Turtles moved an average straight line distance of 60 to 75 feet/day (Kuhns et al 2007). Annual home range size is highly variable depending on individuals but in northern Illinois averaged 123,000 sq. ft. to 150000 sq. ft. (Kuhns et al 2007)

Suitable Sampling Seasons: The greatest trapping success in northern Illinois occurs from May through mid-July (Benda et al. 2007, Kuhns et al. 2007).

Illinois Status: The Blanding's Turtle is considered endangered in Illinois (Illinois Endangered Species Protection Board 2015; Mankowski 2012).

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APPENDIX B

Figures relevant to Freeport W 78.0 Bridge replacement (IDNR Project No. 1506840) in Winnebago County, Illinois

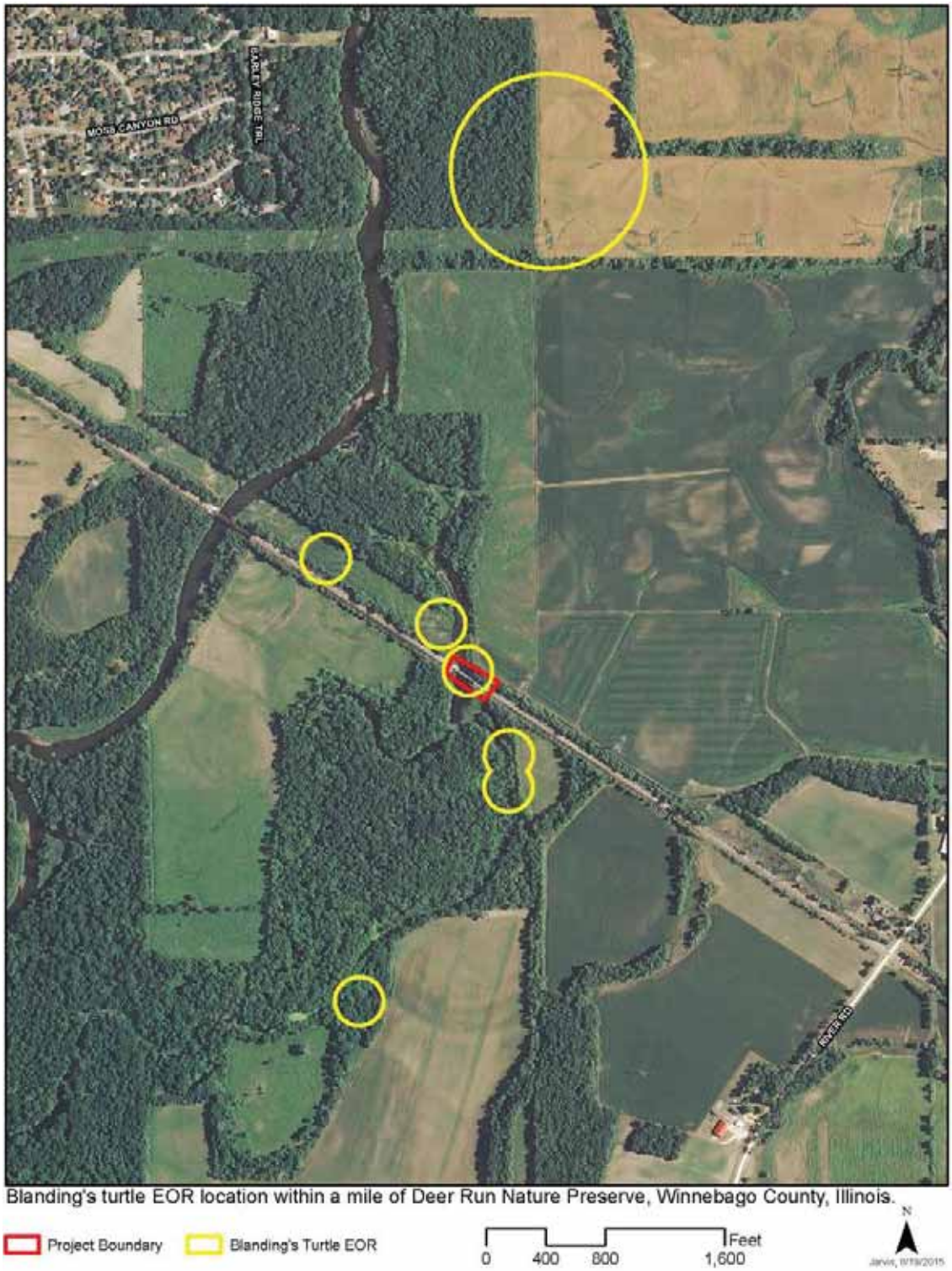

Figure B.1. Element Occurrence Record (EOID 7420) locations for Blanding's Turtle within one mile of the Freeport W 78.0 bridge (IDNR Project No. 1506840) in Winnebago County, Illinois. The bridge is shown in red.

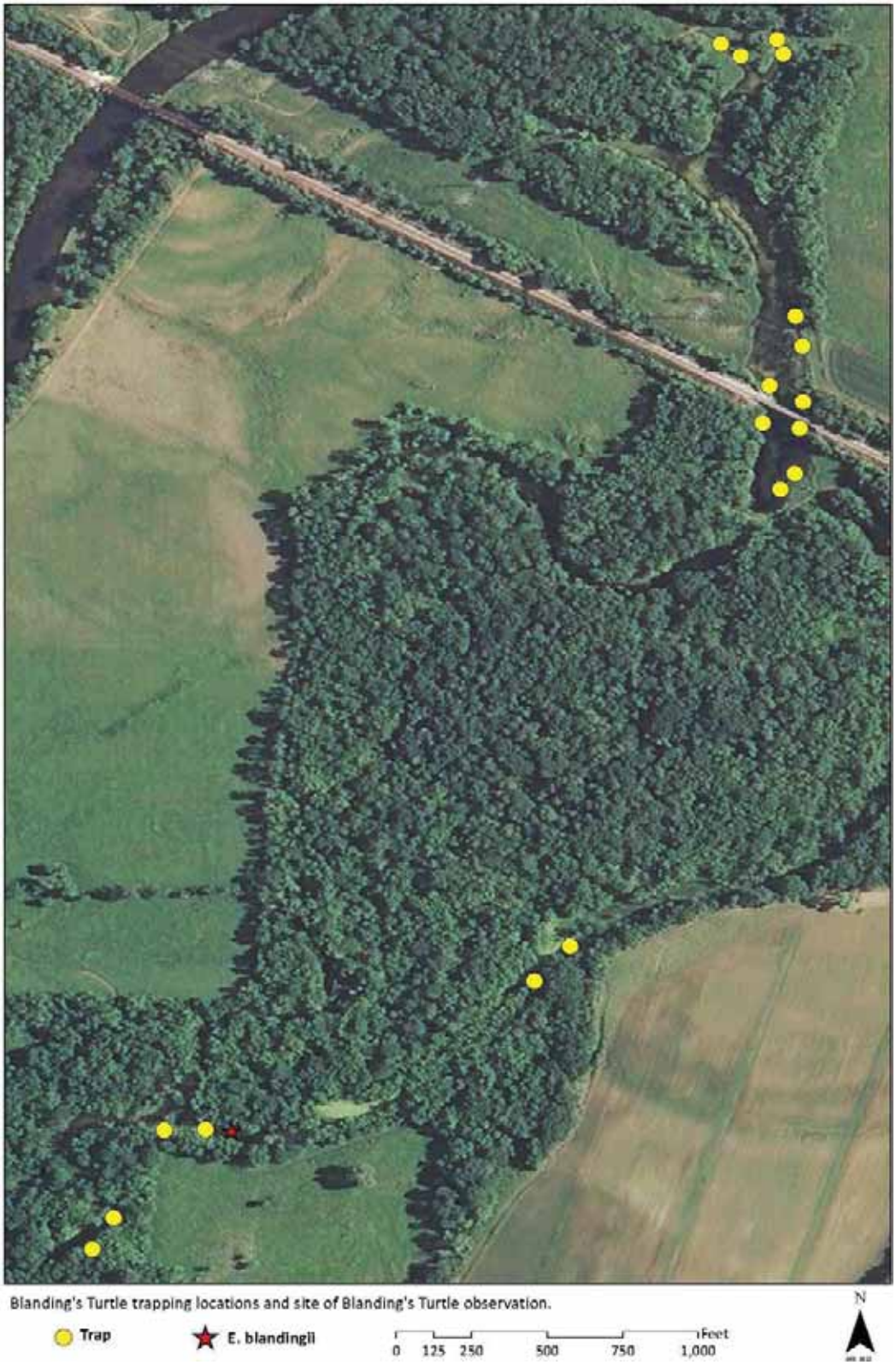

Figure B.2. Locations of traps placed to capture Blanding's Turtles for the pre-construction survey of the Freeport W 78.0 Bridge replacement (IDNR Project No. 1506840) in Winnebago County. Blanding's Turtle observation from 30 June 2015 denoted by red star.

APPENDIX C

Photographs of the Freeport W 78.0 Bridge, scheduled for replacement (IDNR Project No. 1506840) in Winnebago County, Illinois

Plate 1. South side of the Freeport W 78.0 Bridge over the oxbow of the Kiswaukee River.

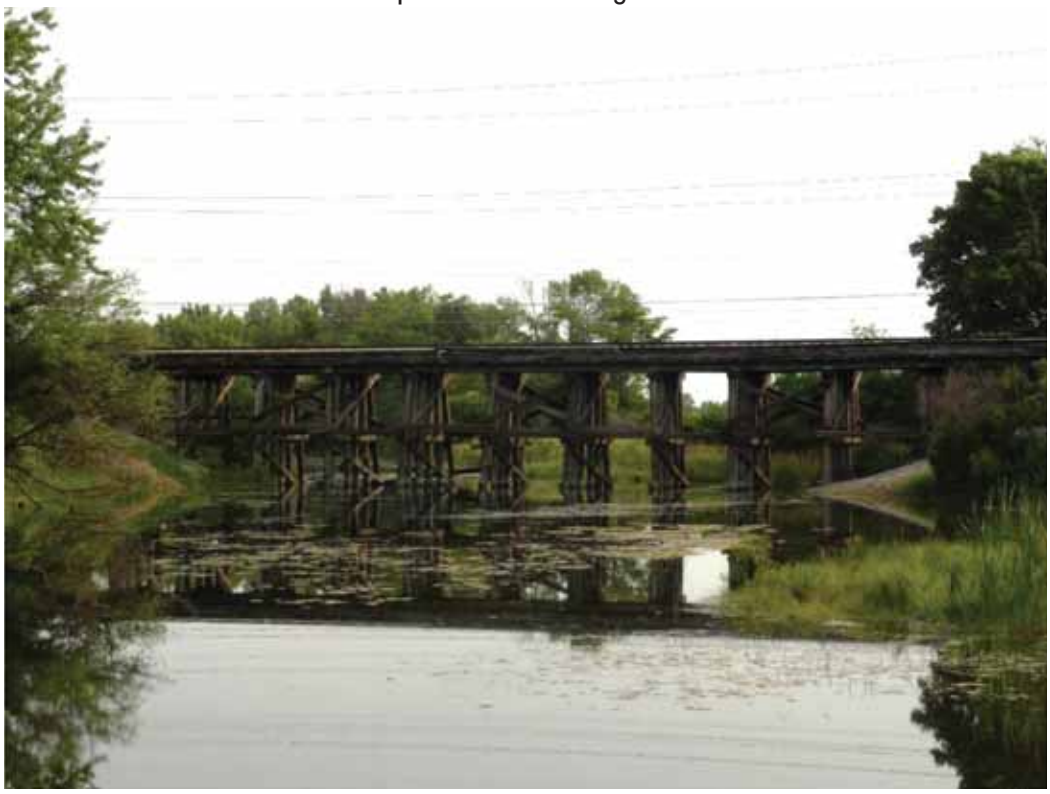

Plate 2. South side of the Freeport W 78.0 Bridge. Image is looking west.

Plate 3. North side of the Freeport W 78.0 Bridge over the oxbow of the Kiswaukee River.

Plate 4. North side of the Freeport W 78.0 Bridge. Image is looking west.

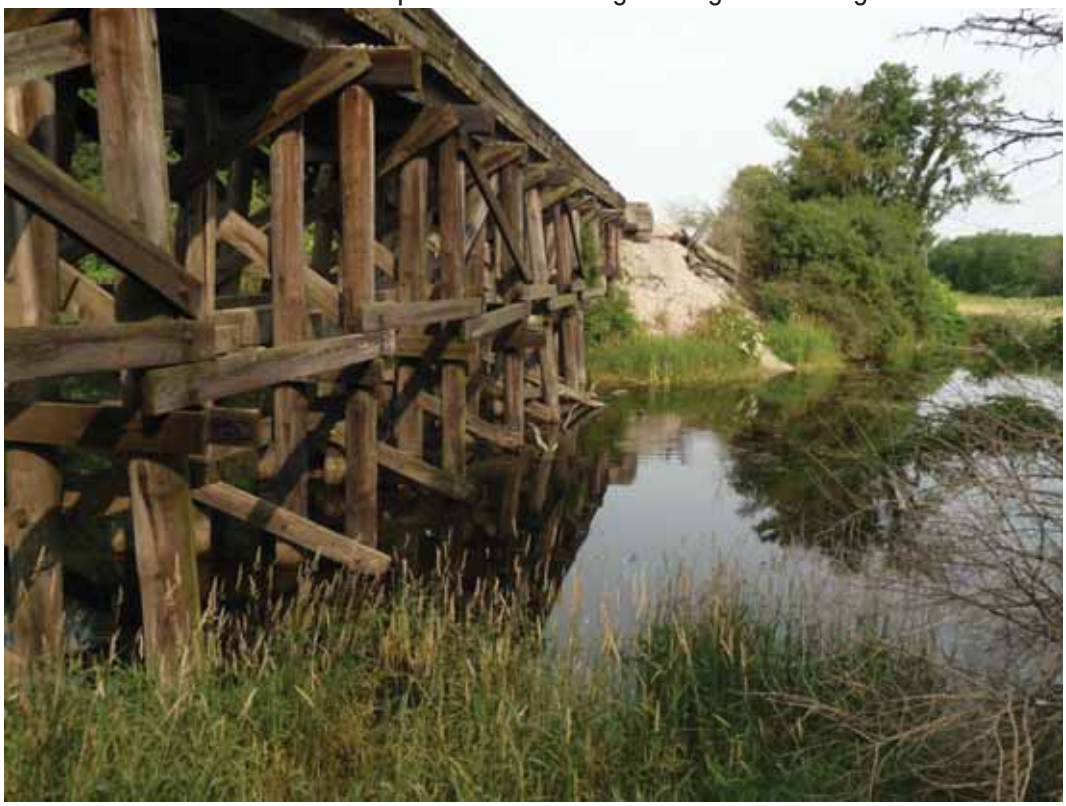

Plate 5. Depredated turtle nest found near the base of the Freeport W 78.0 Bridge. Yellow arrows point to fragments of turtle eggshells.