

IDOT Conservation Plan

State-threatened Eastern Sand Darter, *Ammocrypta pellucida*, and State endangered Smooth Softshell, *Apalone mutica*, which inhabit the Embarras River in the vicinity of the proposed Embarras River Bridge Replacement Project near Newton, IL in Jasper County, IL.

1. Description of the impact likely to result from the proposed taking.

A. Introduction

The Proposed project is for the construction of a shared use trail in the City of Newton which will provide access from an existing trail to Peterson Park. The project has an anticipated construction timeframe beginning in the Spring 2020 with completion approximately 1 year later (weather and river dependant). The scope of work includes creating a Riverwalk and installing a retaining wall. See location Map included as Appendix D for location of instream work.

The total length of the project is 0.81 miles (500' (0.1 mile) of the 0.81 miles will be instream work). The project will be conducted within existing Right-of-Way so there will be no land acquisition. There will be in stream work to the Embarras River.

IDNR's response to the EcoCAT on May 18, 2018 recommended obtaining an Incidental Take Authorization (ITA) for the state-threatened Eastern Sand Darter and the state-endangered Smooth Softshell turtle in order to minimize or avoid potential adverse impacts to these species. A determination for all other natural resources in the project vicinity can be found in the Natural Resources Review Memo (NRR) (Attached as appendix C).

B. Legal Description of the Project Area

The project is located West of IL Route 33 in Jasper County, Illinois. Specifically, for a Trail on the north corporate limits of the City of Newton, IL. The project area is all to be located on City Property.

The Trail is located on a corner of Townships and Ranges described as;

- Within the SE ¼ of the SE ¼ of Section 36 Township 7 North, Range 9 East
- Within the SW ¼ of the SW ¼ of Section 31 Township 7 North, Range 10 East
- Within the NW ¼ of the NW ¼ of Section 6 Township 6 North, Range 10 East
- Within the NE ¼ of the NE ¼ of Section 1 Township 6 North, Range 9 East

all located within Wade Township. The complete project will occur between the "Historic Bridge" North of Newton, IL and continue East to the Peterson Park just West of the Burl Ives Bridge on IL Rte. 33/130. A point located at the Cemetery near the project is used for

the following locality information as a reference point for the project: latitude 38° 59'39"N, longitude 88° 9' 15" W. This point is also in close relation to the location, of the "Working Pad" described in this Plan.

C. Biological Data

The Embarras River has been sampled extensively by INHS and Illinois Department of Natural Resources (IDNR) personnel over the past 30 years, and the aquatic fauna is well documented from over 100 known fish and 130 known mollusk collections. In the last 30 years, 88 species of native fishes and 53 species of freshwater mollusks have been recorded in the Embarras River (INHS Fish Collection database, Champaign, and INHS Mollusk Collection database, Champaign).

Fishes – Surveys for fishes in the Embarras River near Illinois Route 33 by INHS and IDNR personnel had been conducted on multiple occasions; each of these surveys were conducted in the river at sites within a close proximity (4 in particular) to the project. On the 14th of September 2017 a fish survey was completed for this project over a length of approximately 250 yards. This fish survey is included in the appendices as Appendix A. Of particular importance to this study, based on those previous records, is the possibility that the state threatened Eastern Sand Darter, *Ammocrypta pellucida*, is present in the immediate vicinity of the current project West of Illinois Route 33. Twenty-seven species of fish were collected during the survey of which the Eastern Sand Darter was one (15 collected during this survey). The report states the Eastern Sand Darter is common in the Embarras River, and has been collected on at least 35 different occasions in multiple counties.

Other than a single locality in Riley Creek (Mississippi River drainage), the Eastern Sand Darter is present only in the upper Wabash River drainage in the state of Illinois (INHS Fish database, Smith 1979). More than 160 specimens from 53 collections have been recorded between 1900 and 2017 in this area. Within the Embarras River basin, the Eastern Sand Darter occurs commonly in stretches in Coles, Cumberland, Jasper, Crawford, and Lawrence counties. An intensive survey for the species in the Embarras River drainage found it to occur at 35 sites between Charleston (Coles County) and Westport (Lawrence County) in 2007 (Henry et. al. 2009).

Smith (1979) reported that the darter was historically more widespread in occurrence but populations had been decimated as a result of siltation and impoundments. Pollution has also been cited as a factor in the decline of the species (Page and Burr 2011). The preferred habitat of the Eastern Sand Darter is runs of pure sand in small to medium sized rivers (Smith 1979; Page and Burr 2011).

Turtles – Surveys for the Smooth Softshell Turtle were conducted in the project area from the 29th through 31st of August 2017. Details of this survey are included in the Appendices as Appendix B. As a summary, 9 traps were set over two nights over a length of approximately 1 mile. Over these two nights 12 of the Smooth Softshell Turtles were encountered, along with three other reptile species. It is stated that no individual turtles were recaptured. It is also unknown the population size in this project area. Studies suggest that there may be a sizeable population of the state endangered Smooth Softshell in the

Embarras River within the ERBSHA (Embarras River Bottoms State Habitat Area).

The Smooth softshell has a wide range throughout Illinois. It is found in 19 Counties ranging from as far north as Lee and Whiteside, to as far south as Gallatin and Jackson. It ranges from Hancock and Pike Counties in the west to Vermillion and Lawrence Counties in the east. Looking at maps of known locations demonstrates that this species occurs in several different river systems such as the Illinois, Sangamon, Kaskaskia, and Embarras.

D. Habitat and description of activities that will result in take.

The Eastern Sand Darter is known to occur within the Embarras River in the project area. The preferred habitat of this species is runs of pure sand in small to medium sized rivers.

The Smooth Softshell is known to occur within the Embarras River Bottoms State Habitat Area, Jasper County, Illinois, North, South & East of the City of Newton. The preferred habitat is flowing currents over sandy substrates, which is present in the project area. The Smooth Softshell turtles nest in high sand bars that do not flood easily. Due to the Survey it is known now that the species exists at the construction site since there are sand bars upstream, downstream, and currently under the bridge. This bridge collects woody debris from frequent flooding. The debris can alter the river current and create or remove sand bars throughout the years.

At this time, it is unknown as to what contractor will be awarded the project, and subsequently, which method they would choose to complete the necessary work (contractor means and methods). Methods that have been presented and discussed to date that would ultimately result in a take would include the following:

- 1) Construct a working platform along the bank of the river to allow for a working surface for equipment and workers to safely work within the limits of the project.
- 2) Equipment in the River for up to 30 days to allow for the excavation of the embankment. This depending upon the depth of the water at the time of excavation.
- 3) Construct Retaining wall or Gabion wall on the South Face of the River's embankment to allow for the placement of the river walk, and to protect against further erosion of the bank.
- 4) Construct a floating barge causeway in the effort to remove and reconstruct the bridge. This method is unlikely since the river is frequently very low, and the barge will rest on the bottom of the river.

It is believed that options 1 and 3 will be chosen due to the constructability and feasibility that a barge will be too large for the river, and that it is unsafe to have equipment in the river during high flows. The embankment will have to be cut back 5-10' to allow for the placement of the path and retaining wall. A working platform is believed to be necessary for the placement and excavation of materials for construction. The working platform will likely be constructed of temporary riprap placed in the river to allow for equipment to

be able to work at the elevation shown in the section views (appendix E) and out of the flow of the river. Chunks of clean riprap approximately 50 pounds and the size of a basketball or slightly larger are likely to be used. Unless the dam/riprap (See Section 2.C for information on Dam) area immediately upstream from this location is to be removed, in which the existing riprap in stream can be used to create the working surface. The top of the working surface (if necessary) will likely be 20 feet wide for equipment access. The working surface will not be allowed to block/dam the river at any time. The Normal water elevation compared to the shale bottom is estimated to be only 2 feet deep. Therefore the width of the working platform will be approximately 25' wide. Approximately 650 cubic yards of material will be needed for the causeway. The area for the working platform as well as the area of excavation is expected to be no more than 0.50 acres.

The concrete path is expected to be 10' wide with some pedestrian handrail. On one side (either North or South of the path) will have a gabion wall constructed. If the wall is on the North side of the path, this will result in gabion baskets going down to shale/river bed up to the same level with the path. If the wall is on the South side of the path it will have a gabion wall to below frost depth up to 6" above the existing embankment. Having a wall on the South side will be the preferred option, however final design and constructability without undermining the embankment downstream of the cemetery will be the ultimate decision. See Section views (Appendix E) for a typical section for a wall on either side.

No debris will be allowed to fall in the river during construction. Riprap shall be placed with care.

No river work shall occur during the restricted time of the Eastern Sand Darter Spawning May 15 – August 15 nor Smooth Softshell nesting June 1 – September 30. The impact of this action is included in the total area of impact of 0.50 acres.

Once the walk has been placed the working platform shall be removed and disposed of according to IDOT Standards, unless approved to be placed as bank stability with approval by IDOT, IDNR, and Engineer.

E. Explanation of the anticipated adverse effects on the listed species.

The portion of the project which involves in stream work has the potential to impact the Eastern Sand Darter and the Smooth Softshell turtle. Due to the construction of the Riverwalk and working platform necessary for construction.

There will be no instream work during the Eastern Sand Darter spawning season (May 15 – August 15). The construction activities are temporary and the Eastern Sand Darter is most likely to avoid the construction area as much as possible. However, there is a possibility of a fish take during the construction. It is anticipated that the number of Eastern Sand Darter takes will be in the range of 1 to 5 (one per 5,000 sq. ft. of impact area.) Construction specifications call for restoring the river bed to its preconstruction condition upon the completion of the project. Minimization and mitigation strategies are outlined Section 2.

There will be no in-river work during the Smooth Softshell nesting season (June 1 – September 30). The construction activities are temporary and the Smooth Softshell is most likely to avoid the construction area as much as possible. However, there is a possibility of a take during the construction. It is anticipated that the number of Smooth Softshell takes will be in the range of 5 to 10 turtles (one per 3,000 sq. ft. of impact area). However, if the river rises and all sandbars are inundated for more than five consecutive days after July 1st, the Smooth Softshell work restriction can be lifted because any smooth softshell turtle eggs deposited on the sandbar will have drowned, and no new clutches are likely to be laid after that date.

2. Measures the applicant will take to minimize and mitigate that impact.

A. Plans to minimize the area affected by the proposed action, the number of individuals of an endangered or threatened species that will be taken and the amount of habitat affected.

Prior to construction all contractor and on-site personnel will receive training regarding legal and ecological aspects of all suspected State of Illinois listed fish and turtle species. The Resident Engineer will monitor the project to ensure the equipment and personnel are staying within the area of impact and following all restriction dates at all times.

Additionally, the construction route is all off road activities, no traffic control measures will be needed or have to be worked around. This will expedite the construction and reduce the time of instream work. The work is expected to take one construction season. The working pad and excavation area, which is expected to be less than 0.50 acres, will only be required during the portion of construction to be done around the cemetery. This area around the cemetery is only 500 feet +/- (100' additional limits to be added to each side) of the 4,000 + foot long trail. The remaining portion of the trail will not require any instream work and work will only be done on the flat embankment of the river. No debris will be allowed to fall in the river during construction. Riprap shall be placed with care.

The number of Eastern Sand Darter takes is estimated to be between 1 to 5 fish, while the number of Smooth Softshell takes is estimated to be between 5 to 10 turtles. The area of impact is 0.50 acres.

B. Plans for management of the area affected by the proposed action that will allow continued use of the area by the species.

During construction, adjacent land areas will contain erosion and sediment control features. The Department's erosion and sediment control policy will be followed and will be in compliance with the U.S. Army Corps of Engineers Section 404 permit (if required), the water quality certification policies of Illinois EPA, and the requirements within the NPDES construction permit.

The temporary working pad will never completely restrict the river. All fish and turtles in the water will be able to navigate in and around the project area during construction.

Following the path placement, the temporary working pad will be removed by excavating the rocks out of the waterway by the use of an excavator. The contractor will likely set the excavator on what is left of the working pad while removing it from the stream. Upon the final removal the contractor will begin the removal from the centermost part of the river and continue toward the bank. The channel bottom/slope banks shall be constructed to similar conditions as prior to construction activities. It is expected, that after the in-stream work has been completed, the area will be available for continued habitation of the Eastern Sand Darter and Smooth Softshell turtle.

C. Description of all measures to be implemented to minimize or mitigate the effects of the proposed action on the endangered or threatened species.

To minimize the effects of the project on the observed State listed Eastern Sand Darter and potential habitat for the Smooth Softshell turtle, prior to construction all contractors and construction personnel will receive training regarding legal and ecological aspects of all suspected State of Illinois listed fish and turtle species. The contractor will use Best Management Practices (BMP) to excavate the existing embankment and construct the multi-use path. Also erosion and sediment control Best Management Practices shall be utilized to prevent additional silt from entering the river. The Illinois Department of Transportation's Bureau of Design and Environment Special Provisions entitled "National Pollutant Discharge Elimination System/Erosion and Sediment Control Deficiency Deduction" and Temporary Erosion Control will be included for this project.

Limiting the contractor's work time allowed in stream, as well as limiting the work area, will further minimize the impact.

Mitigation for the impacts to the Eastern Sand Darter and Smooth Softshell Turtle may include the removal of the dam upstream of the proposed work (an approximate \$10,000 construction cost +/-), which is detrimental to the spawning of the species. Other mitigation measures can be looked in to if this is not feasible to the project.

Due to the nature of the project, the path is to be a nature/wildlife overlook. This will enhance the opportunity of adding awareness of the species. This awareness already being advertised by the IDNR and INHS in their publications. City Officials can then inform people and post information in the area and educate them on the species and their status.

D. Plans for monitoring the effects of the measures implemented.

The Local Agency shall cause to be conducted two and five year post construction surveys following completion of the proposed project.

The Local Agency shall notify IDOT's Natural Resource Unit upon completion of the project. Once notification of completion has been received, IDOT's Natural Resource Unit will task the Illinois Natural History Survey to initiate post construction monitoring surveys.

The purpose of the monitoring effort is to determine if the Eastern Sand Darter habitat and Smooth Soft Shell have recovered and that the fish and turtle species is still present. It is anticipated that the habitat at the construction site will have recovered and that the listed species are still present.

E. Adaptive management practices that will be used to deal with changed or unforeseen circumstances that affect the effectiveness of measures instituted to minimize or mitigate the effects of the proposed action on endangered or threatened species.

Normal Construction is expected to follow the construction procedures as outlined in Section 1.D”. Slope stabilization is expected to follow normal procedures. However in the event of a slope failure a Geotechnical Engineer shall be consulted to determine the best method to repair the slope. It will be anticipated that in the event of slope failure, slope stabilization techniques such as shotcrete, with soil nails shall be used to repair the slope. This given there is adequate working area to perform this method. The gabion/retaining wall will then be constructed in a fast efficient manner to minimize the time the affected slope is exposed to the elements. All this to be done at the proper elevation using normal concrete forming procedures without anything falling in the water.

The project will have erosion control measures in place at all times. However, this river is prone to unexpected flood events. When the river floods and the erosion control fails, the District personnel will send an incidence of non- compliance to the EPA and repair the erosion control as soon as possible. The runoff will mainly consist of soil which happens frequently, even during non- construction times.

Additionally, the causeway should not be affected by any flood event. A temporary construction pad was used for a previous project upstream to renovate the existing Historic Bridge, with the raising and lowering river due to weather. The materials for the working pad shall be the same as used previously, or be used from the material used from the dam removal as discussed above. The district also has used this type of access on other projects, and the working pad for those projects were not impacted by any flood events, even if overtopped.

If conditions become unsafe for the placement of the wall and path, or the protective measures fail, and material happens to be dropped into the waterway, all material shall be removed as soon as possible. The potential impact area has accounted for some additional area for this potential change in project scope.

F. Verification that funding to support mitigation activities will be available for the life of conservation plan.

The project is funded with a combination of Federal ITEP funding and Local funding, which will be available to finalize the plan for the project.

3. Alternative actions that would not result in the take.

The only alternative that would not result in the “take” of the listed fish or turtle is the “no action” alternative, which means that the path would not be constructed. This area of the path is crucial to the project and without this section of the project, the path would not be constructed. The path adds recreation and vitality to local and regional residents and represents significant development in the community.

Another alternative for construction is using a floating barge causeway in the effort to remove and reconstruct the bridge. The Embarras River water level is normally low (2’ in this area) with exposed sandbars. The barge option will have similar impacts to the stream as the rock causeway because it will rest on the bottom of the river.

4. Data and information to assure that the proposed taking will not reduce the likelihood of the survival of the species.

Fishes –

Other than a single locality in Riley Creek (Mississippi River drainage), the Eastern Sand Darter is present only in the upper Wabash River drainage in the state of Illinois (INHS Fish database, Smith 1979). More than 160 specimens from 53 collections have been recorded between 1900 and 2012 in this area. Within the Embarras River basin, the Eastern Sand Darter occurs commonly in stretches in Coles, Cumberland, Jasper, Crawford, and Lawrence counties. An intensive survey for the species in the Embarras River drainage found it to occur 35 sites between Charleston (Coles County) and Westport (Lawrence County) in 2007 (Henry et. al. 2009).

Suitable habitat exists upstream and downstream of the Project area and the Historic Bridge – North of Newton, IL. Due to the relatively small proposed area affected by the earth excavation and placement of the path, limitations on instream work during spawning, and the assumption that adult fish will swim away from the construction activity. It is expected that Eastern Sand Darter will continue to exist in this reach of the Embarras River. It is not likely that this project will reduce the survival or recovery of the species in the wild in Illinois.

Turtles –

Through the findings of the Smooth Softshell Turtle survey as discussed in section 1C listed above. The project area of the Embarras River Bridge, on Illinois Route 33/130, Jasper County, does contain the Smooth Softshell Turtle, and they will continue to inhabit the area.

The species can be found as far north as Lee and Whiteside counties and as far South as Jackson and Gallatin counties. There are a significant number of records for the species in Shelby and Fayette counties, and along the Illinois River in Mason, Cass, and Menard counties. Therefore, it is not likely that this project will reduce the survival or recovery of the species in the wild in Illinois.

5. Implementing Agreement For Conservation Plan

State-threatened Eastern Sand Darter, *Ammocrypta pellucida*, and State endangered Smooth Softshell, *Apalone mutica*, which inhabit the Embarras River in the vicinity of the proposed Embarras River Bridge Replacement Project near Newton, IL in Jasper County, IL.

- A) the names and signatures of all participants in the execution of the conservation plan;

Mark Bolander (Mayor)  Dated: 2.14.20

- B) the obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities included in the conservation plan and a schedule for preparation of progress reports to be provided to the Department;

This Agreement will be between the Local Agency, identified as the City of Newton, and the Department of Natural Resources (IDNR). IDNR is responsible for the review of this Conservation Plan and for subsequent issuance of the Incidental Take Authorization. The Local Agency, the City of Newton, is responsible for securing authorization for the incidental take; securing all applicable permits and biological clearances, including Section 404, Section 401, and Office of Water Resources permits. These permits will be secured at a later date; inspection of the work and contractor compliance with the contract documents. The activities in the conservation plan will be implemented during construction (i.e. in stream work restrictions for the turtle and fish and avoidance and minimization construction commitments) and after construction is completed (i.e. monitoring fish and turtle in the construction footprint). Construction is estimated to begin Fall of 2020 and be completed in approximately 2 years. Progress reports will be provided to IDNR within 90 days of each monitoring event.

- C) certification that each participant in the execution of the conservation plan has the legal authority to carry out their respective obligations and responsibilities under the conservation plan;
I, Mayor of the City of Newton, Certify that I hold the authority to carry out the respective obligations and responsibilities under the conservation plan.
- D) assurance of compliance with all other federal, State and local regulations pertinent to the proposed action and to execution of the conservation plan; and
- E) copies of any final federal authorizations for a taking already issued to the applicant, if any.

Please See Appendix C of the Conservation Plan for the Natural Resource Review Memo which documents that the project's review and compliance with The Illinois Endangered Species Act, The Interagency Wetlands Policy Act, and the Federal Endangered Species Act.

CONSERVATION PLAN

(APPENDIX A)

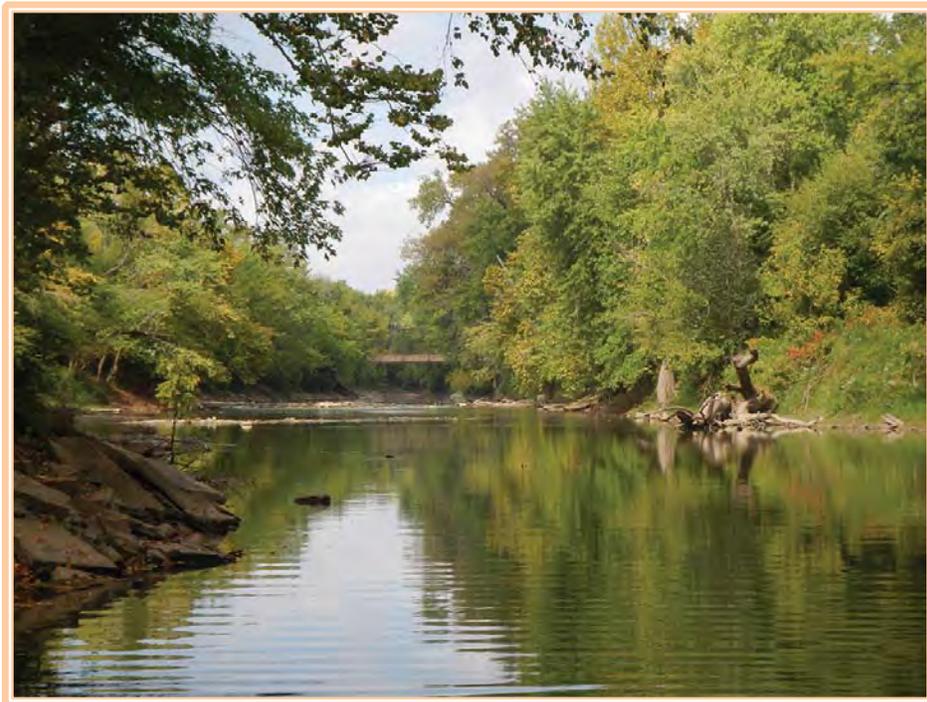


ILLINOIS NATURAL
HISTORY SURVEY
PRAIRIE RESEARCH INSTITUTE

AQUATIC SURVEY REPORT

Fish Survey in the Embarras River at Newton Park Trail, Jasper County, Illinois

IDOT Sequence Number: 20663



Prepared by:
Christopher A. Taylor

INHS/IDOT Statewide Biological Survey & Assessment Program
Program Report 2017 (160)
11 October 2017



PROJECT SUMMARY

This report is submitted in response to a request from IDOT for INHS personnel to conduct a fish survey in the Embarras River along a proposed park trail in Newton, Jasper County, Illinois. The fish survey was conducted on 14 September 2017 using a barge-mounted 200-volt electroshocker for 45 minutes and a minnow seine. Twenty-seven species of fish were collected during the survey. Individuals of the state-threatened Eastern Sand Darter were collected in the project corridor.



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Appendix

This Project Location section references <20663_Fish_Survey_GIS.zip> – containing an ArcGIS shapefile with sampling point information for the Embarras River site discussed in this report where a fish survey was conducted by INHS personnel on 14 September 2017.

Cover photo: The Embarras River at Newton, Jasper County, Illinois. Photograph is facing west (upstream) and was taken by C.A. Taylor on 14 September 2017.

INTRODUCTION

This report is submitted in response to a request made by Susan Dees Hargrove of the Illinois Department of Transportation (IDOT) in an email dated 24 June 2017 to Wendy Schelsky of the Illinois Natural History Survey (INHS), for a fish survey in the area of the Newton Park Trail (Seq. No.: 20663) along the Embarras River in Newton, Jasper County, Illinois. The purpose of this survey was to assess the river for the presence of any state or federally protected fish species or suitable habitat for such species.

PROJECT LOCATION

Sampling for fishes was conducted in a 250-yard stretch the Embarras River along the north edge of Newton, Jasper County, Illinois (**Cover photo; Figure 1**). A point centered in that stretch is used for the following locality information as a reference point for the project: latitude 38.9944°N, longitude 88.1558°W. **Appendix 1** references a shapefile with sampling point information for the Embarras River project site, as discussed in this report.

HABITAT CHARACTERIZATION

The Embarras River in the sampled project corridor alternated between wider slow moving pools, and shallow riffles. Widths ranged from 40 yards in pools to 15 yards in riffles. Low water conditions were present during our visit and depths were 3"-10" in riffles and up to 3' in pools. Substrate was predominately gravel and flat cobble or fine gravel in riffles. Substrate in pools was a mixture of sand, fine gravel and cobble. Riffle stretches with fine gravel substrates were found in the downstream most 60 yards of the sampling reach. Both river banks were high and tree-lined and surrounding land type was predominately urban to the south and agriculture to the north (**Figure 1**).

BACKGROUND

Fishes known from the Embarras River drainage in Illinois total 87 species in 17 families. Among these are three state endangered species (*Notropis boops*, Bigeye Shiner; *Hybopsis amblops*, Bigeye Chub; and *Etheostoma histrio*, harlequin darter; and one state threatened species, *Ammocrypta pellucida*, Eastern Sand Darter. Habitat information presented below was taken from Page and Burr (2011) and Smith (1979). Records for fishes are taken from the Illinois Natural History Survey Fish Collection (Champaign, Illinois).

The bigeye chub has been collected on three separate dates at three different sites within the Embarras River drainage. Two of these collections (North Fork Embarras River, Clark Co., and Kickapoo Creek, Coles Co.) were made in September 1900. The third collection, from Hurricane Creek, 4 mi. N Greenup, Cumberland Co., was made on 2 July 1950. The preferred habitat of the Bigeye Chub is vegetated clear pools and gravel riffles in creeks and small rivers.

Within the Embarras River drainage, the bigeye shiner has been collected three times. It has been collected twice (19 August 1884 at Charleston and 24 September 1900 at Oakland) from

the Embarras River in Coles Co., and once (10 July 1962) from the Little Embarras River 2.5 mi S Oakland, Coles Co. The Bigeye Shiner normally occurs in clear pools with clean gravel and vegetation.

The eastern sand darter occurs commonly in stretches of the Embarras River and has been collected on at least 35 different occasions from the drainage in Coles, Crawford, Cumberland, and Jasper Cos. between 1964 and 2017. An intensive survey for the species in the Embarras River drainage found it to occur 35 sites between Charleston (Coles Co.) and Westport (Lawrence Co.) in 2007 (Henry et. al. 2009). The most recent collection of the eastern sand darter in the Embarras River was 7 August 2012 in Lawrence County near Lawranceville, IL. The most recent collection made nearest to the proposed project corridor was made on 16 September 2011 at Newton. The Eastern Sand Darter normally occurs in deep sandy runs in rivers with high water quality.

Historically, the state threatened Iowa Darter, *Etheostoma exile*, was widely distributed in the northern fourth of Illinois. Now it is restricted to a few streams in extreme northern Illinois and Jordan Creek, and a quarry draining into Jordan Creek, in the Vermilion River drainage (Smith 1979). The species has been collected from four locations in Vermilion County, all near Fairmont, between 1952 and 2004. The preferred habitat of the Iowa Darter is clear lakes with vegetation and mud or clay bottomed pools in small streams.

The INHS Fish Collection contains over 30 records for the state endangered Bluebreast Darter, *Etheostoma camurum*, between 1960 and 2007 in the Vermilion River drainage in Champaign and Vermilion Counties. Tiemann (2008) did a status survey of the species and found that *E. camurum* commonly occurs in the Middle Fork Vermilion River between Potomac and Kickapoo State Park (Vermilion Co.) and in the Salt Fork Vermilion River between Muncie to Kickapoo State Park (Vermilion Co.). It sporadically occurs in the Vermilion River mainstem (Vermilion Co.) and has been recorded only once in the North Fork Vermilion River (Vermilion Co.) (Tiemann 2008). Besides the current sampling results, the most recent record of the Bluebreast Darter was collected in the Vermilion River at Forest Glen (Vermilion Co.) in 2014 by INHS personnel. The Bluebreast Darter normally occurs in swift, rocky riffles in small to medium rivers with high water quality.

The state threatened Gravel Chub, *Erimystax x-puntatus*, is declining over most of its historic range (Smith 1979). The Gravel Chub has been recorded in the Vermilion River twice in Vermilion County. The collections were made 4 mi E of Westville in 1962 and 1997. The Gravel Chub normally occurs in gravel runs and riffles in medium sized creeks to large rivers. Siltation has been cited as the major cause of its decimation (Smith 1979).

The state threatened American Eel, *Anguilla rostrata*, occurs sporadically across Illinois. Within the Vermilion River drainage the species has been collected twice. It was collected in Jordan Creek in 1976 and again in a pond adjacent to the Middle Fork Vermilion River in Kickapoo State Park in 2016. Habitat for American Eels is highly variable. In Illinois, the species has been

collected from deeper pools in large rivers to medium sized creeks and in ponds located in the floodplains of rivers. Spawning in American Eels occurs in the Sargasso Sea region of the middle Atlantic Ocean after mature individuals migrate to that region from freshwater rivers and stream across eastern North America. Adult American Eels are known to establish home ranges generally less than 6 stream miles during summer feeding months and may migrate to overwintering regions with deeper water (Haro 2014).

METHODS

A ~250 yard stretch of the Embarras River along the proposed Newton Park Trail (**Figure 1**) was sampled for fishes by INHS personnel C.A. Taylor, D.B. Wiley, and C.J. Rice on 14 September 2017 using a barge-mounted DC electro-fisher generating approximately 200 volts for 45 minutes and a 10' minnow seine. Sampling was conducted with the barge shocker by moving parallel to both banks for the entire reach. Fifteen supplemental seine kick-sets were taken in shallow riffle habitat. All fishes were identified, counted, and released, with the exception of a few specimens of each species encountered that were vouchered and deposited into the INHS Fish Collection (**Table 1**).

Nomenclature used for fishes discussed in this report follows Page and Burr (2011) except that subspecies are not recognized. The current status of threatened and endangered species of fishes discussed in this report is taken from Illinois Endangered Species Protection Board [IESPB] (2011) and website (https://www.dnr.illinois.gov/ESPB/Documents/2015_ChecklistFINAL_for_webpage_051915.pdf), and Mankowski (2010, 2012).

RESULTS AND DISCUSSION

Over 1100 individuals from 27 species of fishes in seven families (**Table 1**) were collected from the project location (**Cover Photo, Figure 1**). With one exception, all fishes collected during the survey are frequently found in the Embarras River. We collected 15 state threatened Eastern Sand Darters from a riffle area in the lower 60 yards of the sampling reach. No other species listed as threatened or endangered at the state or federal level were collected or observed.

Our sampling results, habitat present, and historical records indicate that a large, likely reproducing population of state threatened Eastern Sand Darters occurs in the Embarras River in the proposed Newton Park Trail corridor. We believe that it is unlikely that any other species of special concern discussed in BACKGROUND occurs in the project corridor. Suitable habitat for the Eastern Sand Darter (sandy runs of medium sized rivers) was abundant in the lower 60 yards of the sampled reach of the Embarras River (**Figure 1**). In central Illinois, eastern sand darters probably spawn in June and July at water temperatures ranging from 20 - 23° C (Johnston 1989).

ACKNOWLEDGMENTS

J.L. Jarvis (INHS) assisted in preparing the map in **Figure 1** and the associated shape file referenced in **Appendix 1**.

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Fish survey locations on Embarras River near Newton Park Trail (Seq no. 20663) Jasper County, Illinois.

▭ Project Boundary ▭ Fish Survey Location
— Stream

0 100 200 400 600 800 Feet

N
Jarvis, 10/3/2017

Figure 1. The Embarras River along the proposed Newton Bike Trail where a fish survey was conducted by INHS personnel C.A. Taylor, D.B. Wiley, and C.J. Rice on 14 September 2017. Area in blue indicates the stretch of the Vermilion River in which the fish survey was conducted. Map created by J.L. Jarvis (INHS).

Table 1. Fishes collected by INHS personnel C.A. Taylor, D.B. Wiley, and C.J. Rice on 14 September 2017 from the Embarras River near Newton, Jasper County, Illinois. # = number of individuals collected; ST = State Threatened

| Family | Scientific name | Common name | # |
|---------------------------------|--------------------------------|---------------------------|------------------|
| Clupeidae | <i>Dorosoma cepedianum</i> | Gizzard Shad | 1 |
| Cyprinidae | <i>Cyprinella spiloptera</i> | Spotfin Shiner | 15 |
| | <i>Cyprinella whipplei</i> | Ironcolor Shiner | 14 |
| | <i>Pimephales notatus</i> | Bluntnose Minnow | 2 |
| | <i>Pimephales vigilax</i> | Bullhead Minnow | >500 |
| | <i>Phenacobius mirabilis</i> | Suckermouth Minnow | 15 |
| | Catostomidae | <i>Carpionodes carpio</i> | River Carpsucker |
| <i>Hypentelium nigricans</i> | | Northern Hogsucker | 2 |
| <i>Ictiobus bubalus</i> | | Smallmouth Buffalo | 2 |
| <i>Moxostoma macrolepidotum</i> | | Shorthead Redhorse | 13 |
| Ictaluridae | <i>Ameiurus natalis</i> | Yellow Bullhead | 1 |
| | <i>Ictalurus punctatus</i> | Channel Catfish | >500 |
| | <i>Noturus eluethurus</i> | Mountain Madtom | 6 |
| | <i>Noturus flavus</i> | Stonecat | 1 |
| | <i>Noturus nocturnus</i> | Freckled Madtom | 1 |
| Centrarchidae | <i>Lepomis cyanellus</i> | Green Sunfish | 10 |
| | <i>Lepomis macrochirus</i> | Bluegill | 14 |
| | <i>Lepomis megalotis</i> | Longear Sunfish | 2 |
| | <i>Micropterus punctulatus</i> | Spotted Bass | 1 |
| | <i>Micropterus salmoides</i> | Largemouth Bass | 2 |
| Percidae | <i>Ammocrypta pellucida</i> | Eastern Sand Darter - ST | 15 |
| | <i>Etheostoma asprigene</i> | Mud Darter | 1 |
| | <i>Etheostoma spectabile</i> | Rainbow Darter | 1 |
| | <i>Percina maculata</i> | Blackside Darter | 1 |
| | <i>Percina phoxocephala</i> | Slenderhead Darter | ~65 |
| | <i>Percina sciera</i> | Dusky Darter | ~20 |
| Sciaenidae | <i>Aplodinotus grunniens</i> | Freshwater Drum | 1 |

APPENDIX 1

This Project Location section references <20663_Fish_Survey_GIS.zip > – containing an ArcGIS shapefile with sampling point information for the Embarras River site discussed in this report where a fish survey was conducted by INHS personnel on 14 September 2017.

The ArcGIS shapefile and this report were both submitted to IDOT via the IDOT Site Assessment Tracking System extranet website (Frostycap) on 11 October 2017.

CONSERVATION PLAN

(APPENDIX B)



Survey for Smooth Softshell in the Embarras River in Newton, Jasper County, Illinois

IDOT Job No. P-97-007-17; Sequence No. 20663; Section No. 16-00048-00-BT



Prepared by:
Andrew R. Kuhns

INHS/IDOT Statewide Biological Survey & Assessment Program

2017: 131
14 September 2017



PROJECT SUMMARY

This report details results of a trapping survey for the Smooth Softshell, *Apalone mutica*, along a proposed multi-use path along the Embarras River (IDOT Job No. 97-038007-17; Sequence No. 20663; Section No. 16-00048-00-BT) in Newton, Jasper County, Illinois. Information on the natural history and ecology of the Smooth Softshell, a species known from the Embarras River both upstream and downstream of the project area can be found in **Appendix A**. Surveys were conducted by INHS Further Studies Ecologist A.R. Kuhns from 29 through 31 August 2017 by INHS Herpetologist A.R. Kuhns. Surveys were conducted under IDNR State Threatened and Endangered Species Permit 05-11S. Survey methods are detailed in **Appendix B** and are approved under University of Illinois IACUC protocol 16-057. The project area and trap locations can be seen in **Appendix C: Figure C.1**. Images the project area can be found in **Appendix D**. The spatial data shown in **Appendix C: Figure C.1** were digitally uploaded to the Further Studies Illinois Site Assessment Tracking System (http://frostycap.isgs.uiuc.edu/idot_extranet/further_studies) on 14 September 2017, and are herein referenced as **Appendix E**. Twelve Smooth Softshell were captured in 18 trap nights of sampling in the project area.



Approved By: Kevin Cummings, Further Studies Aquatics
Group Coordinator-Malacologist

Surveys Conducted By: Andrew R. Kuhns, Ecologist

Edited by: Mark J. Wetzel, Oligochaetologist — Emeritus

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Cover Photo: Bridge over the Embarras River at the western edge of the proposed new multi-use path project (IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in Newton, Jasper County, Illinois. Photograph by A.R. Kuhns.

INTRODUCTION

In a transmittal dated 28 June 2017 Kimberly Kessinger of the Illinois Department of Transportation (IDOT) Bureau of Design and Environment tasked the Illinois Natural History Survey (INHS) to conduct herpetofaunal surveys for Smooth Softshell, *Apalone mutica*, due to the possibility of in-stream work associated with the construction of a multi-use trail from Peterson Park along the south shore of the Embarras River to an existing multi-use path near North Van Buren Street (IDOT Job No. P-97-007-17; Sequence No. 20663; Section No. 16-00048-00-BT), in Newton, Jasper County, Illinois. Information on the natural history and ecology of the Smooth Softshell can be found in **Appendix A**.

PROJECT AREA

This project spans 0.87 miles along the Embarras River in Jasper County Illinois. The project straddles Townships 06N and 07 N, in Range 09E, Sections 1 & 36 of the Newton, IL 7.5' Quadrangle (**Appendix C: Figure C.1**). The majority of the project area is undeveloped secondary growth woods along the rubble reinforced south bank of the Embarras River. The Embarras River substrate consists of shallow sand deposits over hardpan and shale.

METHODS

Database Review

The Illinois Natural Heritage Database maintained by the Illinois Department of Natural Resources (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, a search of both vouchered and un-vouchered specimens in the Illinois Natural History Survey (INHS), University of Illinois Museum of Natural History (UIMNH), and non-INHS Illinois Amphibian and Reptile databases maintained by the Illinois Natural History Survey was 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 (**Appendix C: Figure C.1**).

Field Methods

The project area was visited on 25 July to determine river access points and identify potential trapping locations. On 29 August 2017 the project area was surveyed from a canoe by INHS Further Studies Herpetologist A.R. Kuhns and IDNR intern Jennifer Lesko. Ten single-throated collapsible traps (**Appendix D: Plate D.1**) were baited with invasive Asian silver carp chunks and staked into the substrate. The area trapped is depicted in **Appendix C: Figure C.1**. Additional information on sampling methods can be found in **Appendix B**.

RESULTS

Database Review

In 2008, the Smooth Softshell turtle was documented in the Embarras River near Greenup in Cumberland County, Illinois which is approximately 30 river miles upstream of Newton, Illinois (Bluett 2014). As recently as 2015, the Smooth Softshell was documented near Lawrenceville in Lawrence County, Illinois which is approximately 55 river miles downstream of Newton, Illinois (Kuhns 2015). There were no records for the 85 river miles between these two points.

Field Surveys

Ten traps were set along a 1 mile stretch of the Embarras River (**Appendix C: Figure C.1**). Trap number 3 was lost (due to either vandalism or becoming unmoored from the substrate). Thus nine traps were checked on 30 and 31 August 2017 for a total of 18 trap nights. Twenty-two turtles representing four species were captured during this survey (**Table 1**). The most abundant turtle species captured was the Smooth Softshell, *Apalone mutica*, with 12 individuals captured (**Table 1; Appendix D: Plates 2 & 3**). Also captured were five Slider, *Trachemys scripta* (**Appendix D: Plate 4**), four Spiny Softshell, *Apalone spinifera* (**Appendix D: Plate 3**), and one Common Snapping Turtle, *Chelydra serpentina* (**Appendix D: Plate 5**).

Table 1. Dates, effort, and turtle captures and Catch per Unit Effort (CPUE) during trapping for turtles for the proposed multi-use path project (IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in Newton, Jasper County, Illinois from 29 through 31 August 2017.

| Trap | Latitude | Longitude | Set Date | Pull Date | Trap nights | <i>Apalone mutica</i> | <i>Apalone spinifera</i> | <i>Chelydra serpentina</i> | <i>Trachemys scripta</i> |
|---------------|----------|-----------|-----------|-----------|-------------|-----------------------|--------------------------|----------------------------|--------------------------|
| 1 | 38.99860 | -88.1612 | 8/29/2017 | 8/31/2017 | 2 | 1 | 1 | 0 | 1 |
| 2 | 38.99763 | -88.163 | 8/29/2017 | 8/31/2017 | 2 | 0 | 0 | 1 | 0 |
| 3 | 38.99640 | -88.1633 | 8/29/2017 | 8/29/2017 | 0 | 0 | 0 | 0 | 0 |
| 4 | 38.99499 | -88.1596 | 8/29/2017 | 8/31/2017 | 2 | 0 | 0 | 0 | 2 |
| 5 | 38.99472 | -88.1584 | 8/29/2017 | 8/31/2017 | 2 | 0 | 0 | 0 | 0 |
| 6 | 38.99450 | -88.1568 | 8/29/2017 | 8/31/2017 | 2 | 5 | 0 | 0 | 0 |
| 7 | 38.99483 | -88.153 | 8/29/2017 | 8/31/2017 | 2 | 2 | 0 | 0 | 0 |
| 8 | 38.99512 | -88.1507 | 8/29/2017 | 8/31/2017 | 2 | 3 | 2 | 0 | 2 |
| 9 | 38.99533 | -88.1499 | 8/29/2017 | 8/31/2017 | 2 | 1 | 1 | 0 | 0 |
| 10 | 38.99551 | -88.1488 | 8/29/2017 | 8/31/2017 | 2 | 0 | 0 | 0 | 0 |
| Totals | | | | | 18 | 12 | 4 | 1 | 5 |
| CPUE | | | | | | 0.67 | 0.22 | 0.06 | 0.28 |

DISCUSSION

The Smooth Softshell is found in 6th order and larger rivers throughout much of central and southern Illinois. The species is commonly associated with large sandbars that are used as basking areas, nesting sites, and concealment – Smooth Softshells can completely bury themselves in sandy substrates in only a few seconds (**Appendix A**).

Twelve Smooth Softshell were captured during this survey. Smooth Softshell were captured in traps throughout the study area from well upstream of the project area to near the downstream project terminus (**Appendix C: Figure C.1**). Because no individuals were recaptured, it is not possible to provide even a rudimentary estimate of population size within the project area. However, a general comparison can be made between this survey and targeted sampling for Smooth Softshell in the Embarras River near Lawrenceville, IL in 2015. Near Lawrenceville, IL the CPUE for Smooth Softshell was 0.31 turtles per trap night (Kuhns 2015). The current survey of the Embarras River at Newton documented 0.67 turtles per trap night.

ACKNOWLEDGEMENTS

Terry Esker, district heritage biologist with the Illinois Department of Natural Resources (IDNR), allowed IDNR intern Jennifer Lesko to assist with setting traps on 29 August 2017. Jason Robinson (INHS-Aquatic Entomologist) assisted with checking and pulling traps on 31 August 2017.

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APPENDIX A

Natural History of the Smooth Softshell, *Apalone mutica*

SYNOPSIS

This appendix contains information on reptile species listed as endangered in the State of Illinois that may occur in the Embarras River in Newton, Jasper County, Illinois. 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).

Species range maps were created by Ethan J. Kessler. 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

Crother, B.I. 2012. Scientific and standard English names of amphibians and reptiles of North America north of Mexico, with comments regarding confidence in our understanding. 7th Edition. SSAR Herpetological Circular. 39: 1–101.

Reproduction: Females nest on exposed sand bars in June and July. Hatchlings typically emerge in August and September. If eggs are inundated for greater than 4 days, they have almost no chance of hatching

Activity: Smooth Softshell are some of the most vagile of the North American freshwater turtle species. Some individuals may move up to 12 miles over the course of several days (Ross 2016).

Suitable Sampling Season: Ross (2016) reported good success trapping in late spring and early summer with trap captures tapering off as the summer progresses. In the past, IDNR has recommended sampling between 15 July and 31 August (A.R. Kuhns pers. obs.).

Illinois Status: The Smooth Softshell is considered endangered in Illinois (Illinois Endangered Species Protection Board 2015; Mankowski 2012).

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APPENDIX B

Sampling methods appropriate for the detection of amphibians and reptiles listed as endangered or threatened in the state of Illinois.

Table B.1. Species of amphibians and reptiles listed as threatened or endangered in Illinois and

| | | Threatened | Endangered | Dip-Net | Minnow Trap | Call Survey | Visual Encounter | Hoop Trap | Fyke Net | Seine | Drift Fence | Coverboard | |
|--------------------------------|-------------------|-------------------------------------|------------|---------|-------------|-------------|------------------|-----------|----------|-------|-------------|------------|--|
| State Listed Herptiles | | | | | | | | | | | | | |
| AMPHIBIANS | SALIENTIA | <i>Ambystoma jeffersonianum</i> | X | | | | | | | | | | |
| | | <i>Ambystoma platineum</i> | | X | | | | | | | | | |
| | | <i>Cryptobranchus alleganiensis</i> | | X | | | | | | | | | |
| | | <i>Desmognathus conanti</i> | | X | | | | | | | | | |
| | | <i>Hemidactylium scutatum</i> | X | | | | | | | | | | |
| | | <i>Necturus maculosus</i> | X | | | | | | | | | | |
| | ANURA | <i>Hyla avivoca</i> | | X | | | | | | | | | |
| | | <i>Pseudacris streckerii</i> | | X | | | | | | | | | |
| | | <i>Gastrophryne carolinensis</i> | X | | | | | | | | | | |
| REPTILES | TESTUDINES | <i>Apalone mutica</i> | | X | | | | | | | | | |
| | | <i>Clemmys guttata</i> | | X | | | | | | | | | |
| | | <i>Emydoidea blandingii</i> | | X | | | | | | | | | |
| | | <i>Kinosternon flavescens</i> | | X | | | | | | | | | |
| | | <i>Macrochelys temminckii</i> | | X | | | | | | | | | |
| | | <i>Pseudemys concinna</i> | | X | | | | | | | | | |
| | | <i>Terrapene ornata</i> | X | | | | | | | | | | |
| | SERPENTES | <i>Clonophis kirtlandii</i> | X | | | | | | | | | | |
| | | <i>Crotalus horridus</i> | X | | | | | | | | | | |
| | | <i>Pantherophis emoryi</i> | | X | | | | | | | | | |
| | | <i>Heterodon nasicus</i> | X | | | | | | | | | | |
| | | <i>Masticophis flagellum</i> | | X | | | | | | | | | |
| | | <i>Nerodia fasciata</i> | | X | | | | | | | | | |
| | | <i>Nerodia cyclopion</i> | X | | | | | | | | | | |
| | | <i>Sistrurus catenatus</i> | | X | | | | | | | | | |
| | | <i>Tantilla gracilis</i> | X | | | | | | | | | | |
| <i>Thamnophis sauritus</i> | X | | | | | | | | | | | | |
| <i>Tropidoclonion lineatum</i> | X | | | | | | | | | | | | |

potential sampling methods for their detection.

Sampling Methods for the Detection of State Listed Amphibians and Reptiles in Illinois

ACTIVE SAMPLING METHODS

Call Survey. This method is only effective for anurans during the breeding season. The researcher either visits wetlands in the evening hours to listen to the frog chorus, or places an audio recording device at the wetland during the day and returns the following morning to retrieve the recording. In either case, the researcher must be familiar with the calls of frogs and toads in the area in order to identify the species based only upon the calls in the chorus. To be effective, the researcher must also be familiar with the ecology of the target species and sample during its breeding season in habitats where it is likely to reside.

Dip Netting. A dip net is useful for sampling aquatic animals and can be used to capture individuals observed or as a means of blindly sampling for aquatic organisms in vegetation choked or turbid water. Typically, a researcher will pull the net along the substrate and through the water column for approximately 3 feet, and then finish the net sweep by pulling the net up and out of the water with the net opening facing upward. The researcher can then remove any substrate or detritus from the net and search for captured animals.

Seine. A seine is a fishing net that hangs vertically in the water column suspended by floats with the bottom edge held down by weights. The net is dragged along the bottom of aquatic habitats and captures aquatic amphibians and reptiles when it is drawn onto shore or scooped out of the water. In many ways, it functions much like a large dip net when used for amphibian and reptile sampling.

Visual Encounter Survey (VES). Visual encounter surveys involve searching appropriate habitat (mainly turning cover items such as logs, rocks and miscellaneous debris and also visually scanning open habitats) and recording all species encountered. Surveys can be regimented such as by walking pre-defined grid patterns and time limits, or in a more haphazard wandering pattern. This method is most effective if the researcher is familiar with the target species ecology and can focus on habitat areas where the species is most likely to be encountered, as well as time of day and seasons when the species is most active. A thorough explanation of this technique can be found in Heyer et al. (1994).

PASSIVE SAMPLING METHODS

Drift Fence. A drift fence is any object that is placed perpendicular to the ground surface as a way to intercept animals that may be passing through. It is often constructed of hardware cloth or silt fencing buried a few inches into the ground to prevent burrowing; but natural cover items such as large logs or rock formations may also function as a drift fence. Animals are captured by

travelling parallel to the fence until they fall into a receptacle, such as a bucket or coffee can, which has been buried flush with the substrate. Similarly, funnel traps can be placed along the drift fence to capture animals that are walking along the fence. This technique is covered in Heyer et al. (1994) and McDiarmid et al. (2012).

Coverboards. Coverboards are essentially any item sitting flush with the substrate under which an amphibian or reptile may seek refuge. Artificial coverboards are often made of plywood or corrugated tin and are placed in areas likely to harbor the species of interest. Coverboards often attract small mammals and invertebrates as well, which may enhance their ability to attract amphibians and reptiles. Well-seasoned artificial cover objects with little vegetation underneath them seem to work better in attracting herptiles, therefore their use most effective for long term projects when they can be set out many months in advance of surveys.

Minnow Trap. Traps may be constructed of rope, monofilament, or steel and may have funnels or throats, at one or both ends, which allow the animal to enter into the trap body but prevent them from easily exiting the trap. Minnow traps may be cylindrical or rectangular and can be baited or not depending on the target species. If baited, the bait is refreshed every 2 to 4 days. Traps are usually placed so that a portion of the trap placed in water is emergent so that captured animals have access to air and will not drown. However, in riverine environments, where there is little to no probability of capturing non-gilled species, the traps may be fully submerged. Effort is recorded in trap hours (i.e., number of traps multiplied by the number of hours the traps were deployed). Results are reported as the numbers of each species captured.

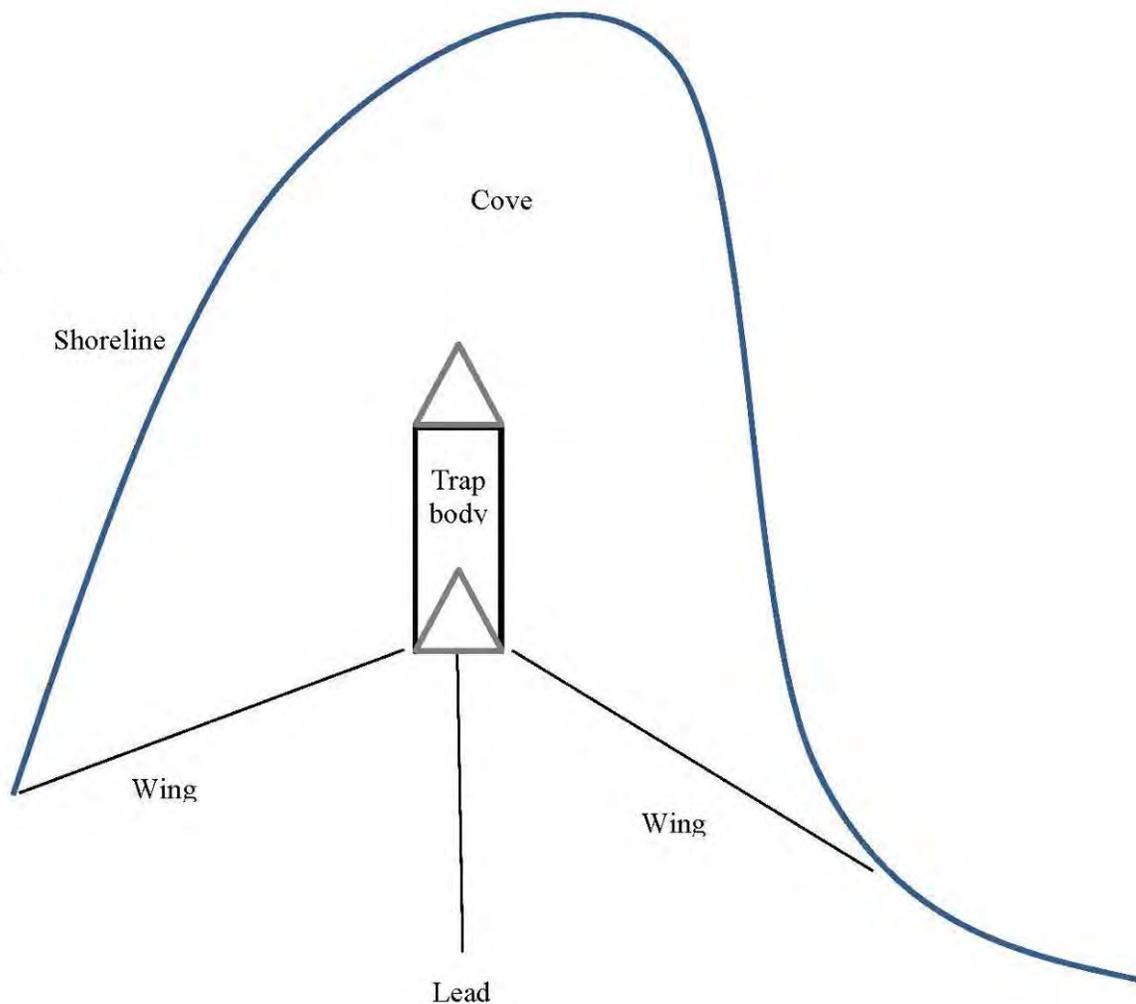
Hoop Trap. These traps work on the same principal as minnow traps but are larger in diameter and have larger throats to allow for the capture of larger animals such as turtles (Legler 1960). All hoop traps are placed such that at least 5cm of the trap is above the surface of the water to ensure captured turtles have access to air. Traps are tied via string or rope to surrounding vegetation to ensure that captured turtles do not roll traps into deeper water and drown. Traps are placed parallel to either the shoreline or potential basking sites. Traps are baited (usually with sardines canned in spring water or oil). Traps are checked daily and bait is changed every 2 to 4 days. Effort is recorded in trap hours (i.e., number of traps multiplied by the number of hours the traps were deployed). Results are reported as the numbers of each species captured.

Fyke Net. This trapping method is essentially a combination of a Drift Fence and a Hoop Trap. It consists of a hoop trap body with a single throat, and long wings and a lead that extend out from the throat in a double V formation (**Figure B.1**). Wings and leads have a lead-line that makes them hang vertically in the water column. This essentially extends the reach of the throat and works well for turtle species that are not attracted to readily available baits. It can be used to intercept turtles entering a cove or attempting to access a popular basking site, by funneling them into the trap body where the throat prevents them from escaping. A description of Fyke Nets can be found in Vogt (1980).

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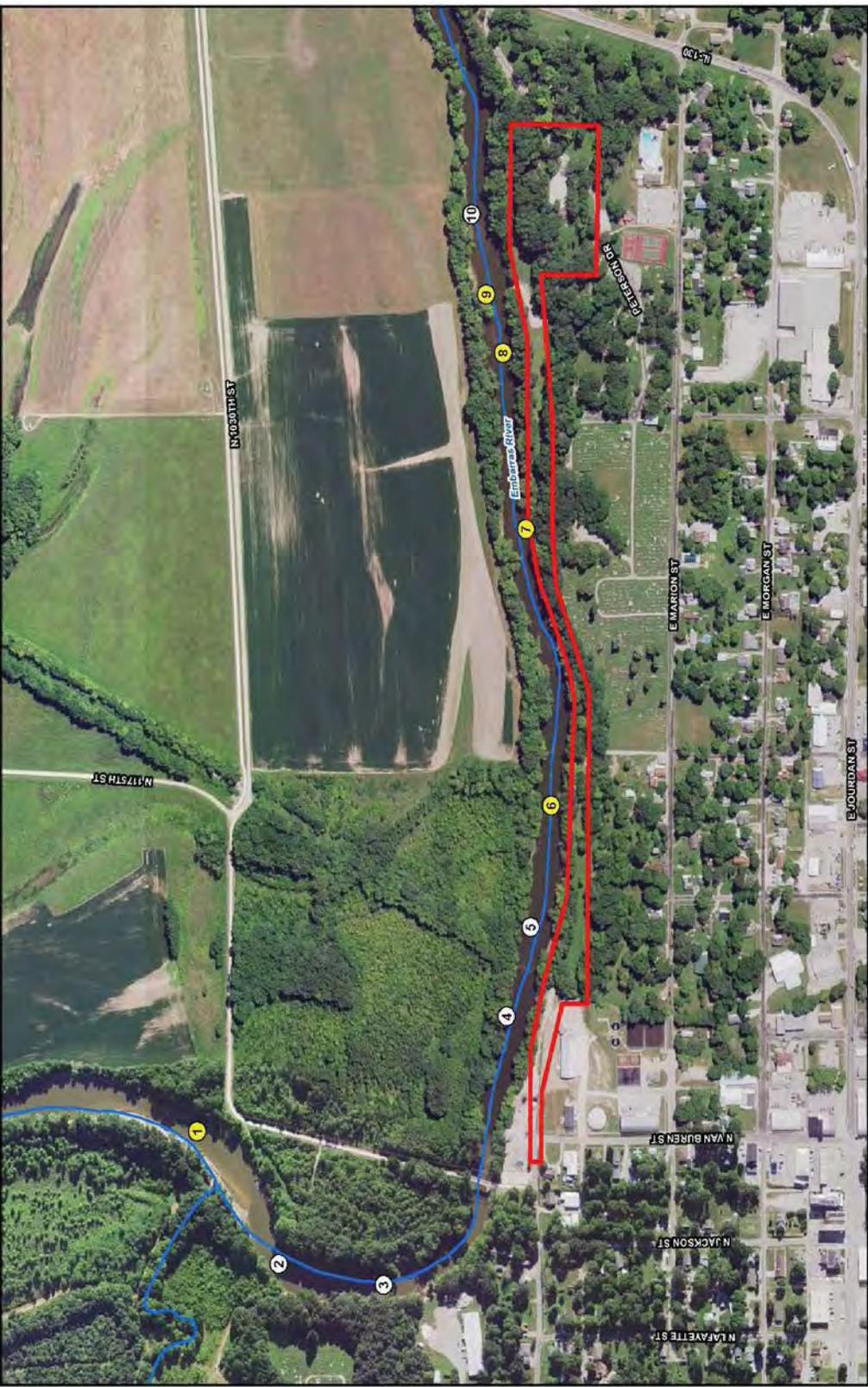
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Figure B.1. Fyke Net set to capture turtles attempting to enter a cove (as viewed from above).



APPENDIX C

Figures relevant to the proposed multi-use path project
(IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in
Newton, Jasper County, Illinois.



Smooth softshell turtle survey on the Embarras River near the proposed Newton Park Trail (Sequence no. 20663) Jasper County, Illinois.



Figure C.1. Project boundary and herpetological survey area for the proposed multi-use path project (IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in Newton, Jasper County, Illinois.

APPENDIX D

Plates relevant to the proposed multi-use path project
(IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in
Newton, Jasper County, Illinois



Plate 1. Single throated collapsible hoop trap baited with chunks of invasive Asian Carp set for turtle surveys of the proposed multi-use path project (IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in Newton, Jasper County, Illinois from 29 through 31 August 2017; photograph by A.R. Kuhns, INHS.



Plate 2. One of twelve Smooth Softshell captured over 18 trap nights during surveys for the proposed multi-use path project (IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in Newton, Jasper County, Illinois from 29 through 31 August 2017; photograph by A.R. Kuhns, INHS.



Plate 3. Spiny Softshell (left) and Smooth Softshell (right) captured during surveys for the proposed multi-use path project (IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in Newton, Jasper County, Illinois from 29 through 31 August 2017; photograph by A.R. Kuhns, INHS.



Plate 4. Melanistic male Slider Turtle captured during surveys for the proposed multi-use path project (IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in Newton, Jasper County, Illinois from 29 through 31 August 2017; photograph by A.R. Kuhns, INHS.



Plate 5. Adult Common Snapping Turtle captured during surveys for the proposed multi-use path project (IDOT Job No. 97-038007-17; Sequence No. 20663) along the Embarras River in Newton, Jasper County, Illinois from 29 through 31 August 2017; photograph by A.R. Kuhns, INHS.

APPENDIX E

Arc-GIS Shapefiles

An ArcGIS folder <20663_Herp_Survey_GIS.zip > containing an Arc-GIS shapefile of the sampled area constitutes this appendix. The ArcGIS shapefile and this report will be submitted to IDOT via the IDOT Site Assessment Tracking System extranet website [Frostycap].

CONSERVATION PLAN

(APPENDIX C)



Illinois Department of Transportation

Memorandum

To: Greg S. Lupton Attn: Greg S. Lupton
From: Jack A. Elston By: Thomas C. Brooks
Subject: Natural Resources Review
Date: July 26, 2019

Newton Bike Trail
T 6N and 7N, R 9E, Section 1 and 36
Seq.: 20663 and 20663 A
Jasper County

This review covers the original project submittal as well as Addendum A. The proposed project is for the construction of a shared use trail in city of Newton which will provide access from an existing trail to Peterson Park. The scope of work includes creating a Riverwalk and installing a rock retaining wall.

The total length of the project is 0.87 miles. The project will be conducted within existing right of way so there will be no land acquisition. There will be in stream work to the Embarras River. There will be 0.5 acres of tree removal necessary to complete the project.

Review for Illinois Endangered Species Protection and Illinois Natural Areas Preservation – Part 1075

The Illinois Natural Heritage Database lists the Embarras River as an Illinois Natural Area Inventory Site. The project will require in stream work in the Embarras River. The Illinois Natural Heritage Database contains a record of the state listed Smooth softshell turtle and Eastern sand darter within the Embarras River at the project location. Aquatic surveys for fish and turtles were conducted in 2017. Twelve Smooth softshell turtles and fifteen Eastern sand darter were found.

We consulted with the IDNR and they recommended the IDOT obtain authorization for the potential incidental taking of the species. We also contacted the project proponent and they concurred with our recommendation to secure incidental taking authorization. **By copy of this memorandum, we are notifying the IDNR of the Local Agency's commitment to obtain incidental taking authorization.**

Per IDOT policy, the incidental take authorization must be in place prior to awarding the contract for the work that will cause the incidental taking. This project is clear for design approval only. IDOT policy and procedures for obtaining an incidental take authorization are detailed in the Bureau of Design and Environment Manual at 26.06(h). The first step in obtaining incidental taking authorization is to prepare a Conservation Plan. **IDOT BDE is available to provide information and technical assistance as needed in preparing the**

Conservation Plan which shall be submitted to this office. IDOT BDE will conduct all coordination with the Illinois Department of Natural Resources.

Please note that the regulations for obtaining an incidental taking authorization allow 150 days for processing.

This review for compliance with 17 Ill. Adm. Code Part 1075 is valid for two years unless new information becomes available that was not previously considered; the proposed improvement is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the proposed improvement has not been implemented within two years of the date of this memorandum, or any of the above listed conditions develop, a new review will be necessary.

Therefore, consultation under Part 1075 is complete.

Review for Illinois Interagency Wetland Policy Act – Part 1090

The National Wetlands Inventory, Ducks Unlimited Wetlands Inventory, ground level and aerial photos, plan sheets, were examined. A survey for wetlands was conducted on June 1, 2017. Two sites were determined to be wetlands.

The Wetland Delineation Report and spatial information (ArcGIS shapefile) are saved in the project folder. The project sponsor will consider location and design alternatives to avoid and minimize adverse wetland impacts to the extent practical. After the extent of impacts is determined, a Wetland Impact Evaluation (WIE) form will be completed and submitted to the IDOT Bureau of Design and Environment. Unavoidable adverse wetland impacts are subject to the applicable ratios specified in 17 Ill. Adm. Code Part 1090.50 (c)(8). If the project will avoid adverse wetland impacts, the WIE should reflect the determination that adverse wetland impacts will not occur. The WIE form and instructions for its completion can be accessed at <http://apps.dot.illinois.gov/environment/wetlands.asp>.

Therefore, review for wetlands under Part 1090 remains open until receipt of the WIE.

Review for Endangered Species Act - Section 7

The proposed improvement was reviewed in fulfillment of our obligation under Section 7(a)2 of the Endangered Species Act. Our review included use of the US Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) web-based review tool. Through IPaC, an official species list was generated. The list contains the endangered, threatened, proposed and candidate species and proposed and designated critical habitat that may be present within or in the vicinity of the proposed improvement. The following species are listed: Indiana bat (Ibat), Northern long-eared bat (NLEB), Rabbitsfoot mussel, and Eastern prairie fringed orchid. No proposed or designated critical habitat is listed in Jasper County. **Under 50 CFR 402.12(e), the accuracy of the species list is limited to 90 days.**

Within IPaC there is a Determination Key for the NLEB and Ibat. We used the key to determine applicability of the project with the USFWS revised programmatic biological opinion for transportation projects dated 12-15-2016 and to assess what effect the project would have on NLEB or Ibat. We completed an IPaC qualification interview and determined that the project is **within the scope of the programmatic biological opinion and is not likely to adversely affect either bat species** provided the following conservation measure is implemented:

Trees three (3) inches or greater in diameter at breast height shall not be cleared from April 1st through September 30.

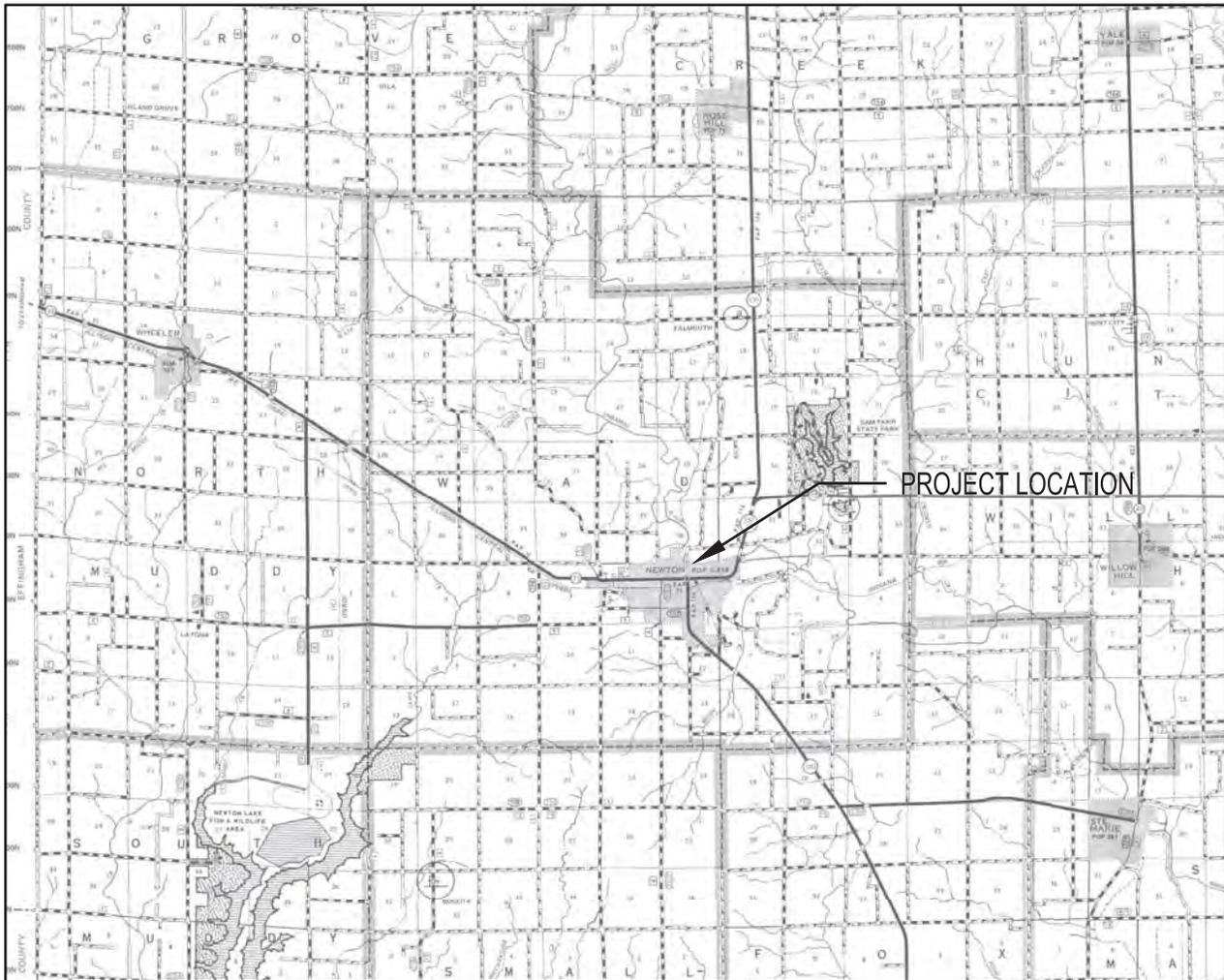
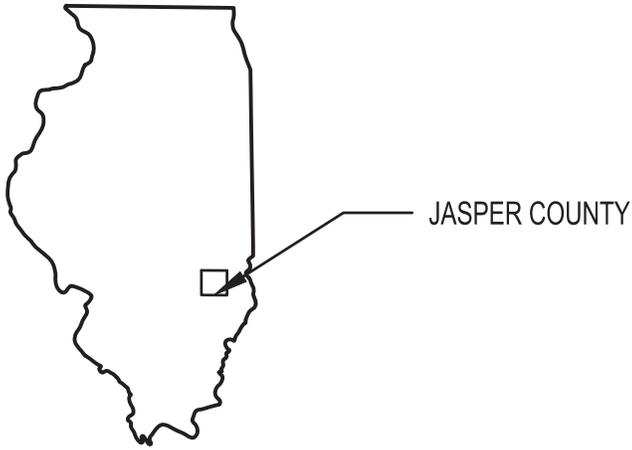
We cross-referenced the preferred habitat of each of the remaining listed species with our knowledge of the project area and determined that the proposed improvement will have no effect on those species.

Should the project be modified or new information indicates listed or proposed species may be affected, consultation or additional coordination should be initiated.

KCB

CONSERVATION PLAN

(APPENDIX D)

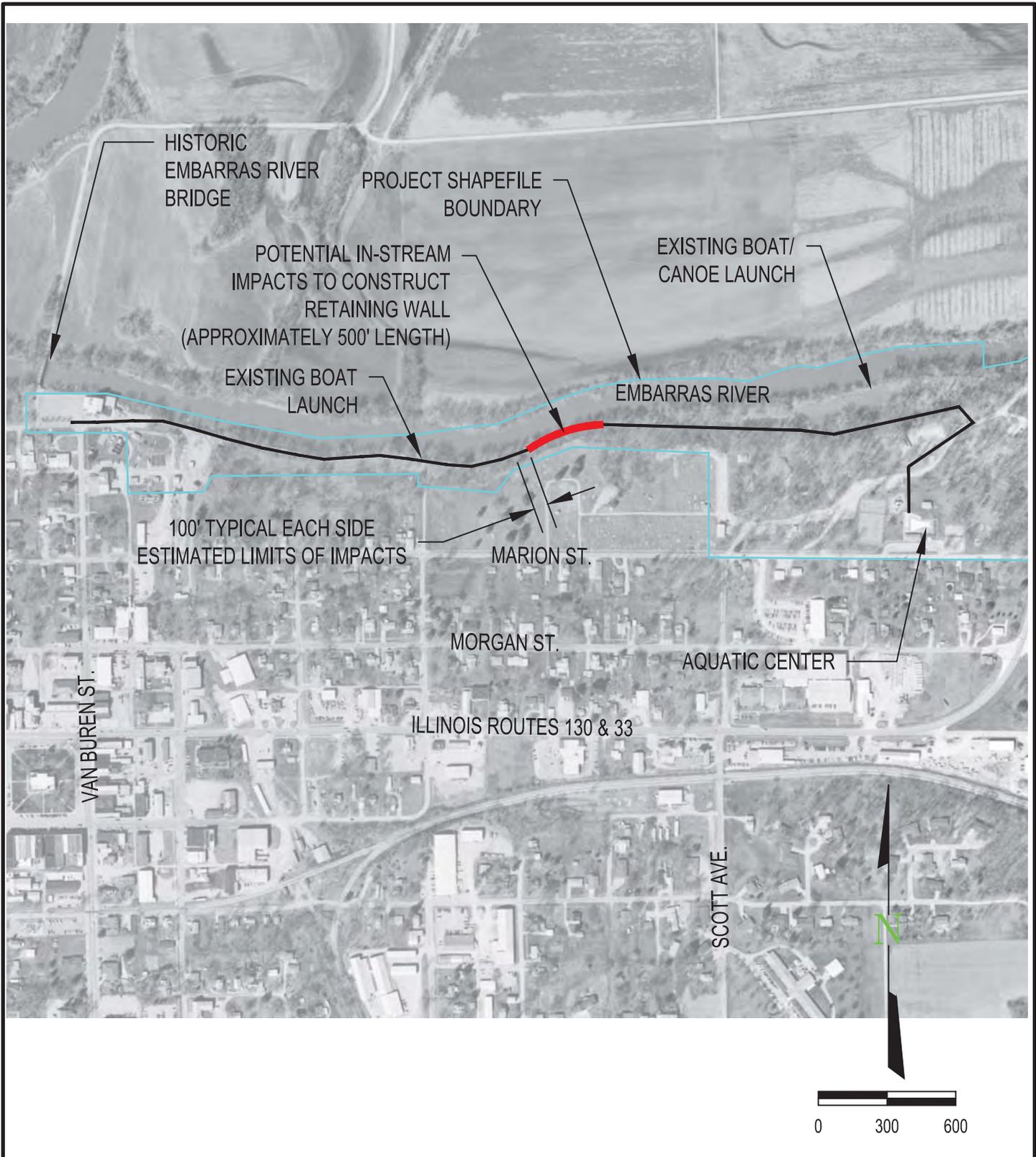


JASPER COUNTY HIGHWAY MAP



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 Design Firm #184-003108

APPENDIX D
 PROJECT LOCATION MAPS
 NEWTON BIKE TRAIL
 ITEP, 2016
 JASPER COUNTY, ILLINOIS

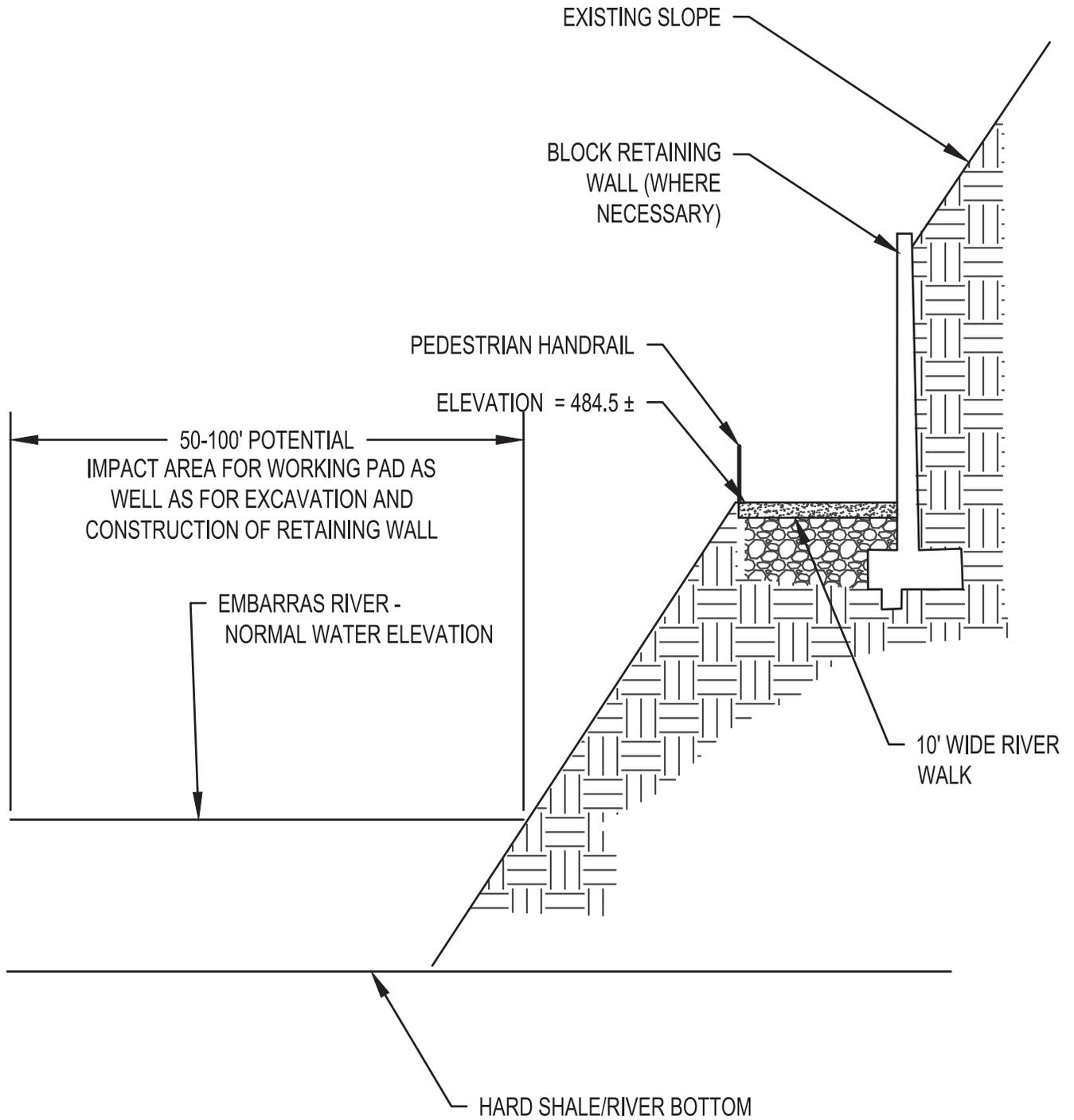


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APPENDIX D - CONSERVATION PLAN
 PROJECT MAP
 NEWTON BIKE TRAIL
 ITEP, 2016
 JASPER COUNTY, ILLINOIS

CONSERVATION PLAN

(APPENDIX E)



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APPENDIX E - CONSERVATION PLAN
 RIVER WALK SECTION
 CITY OF NEWTON, ILLINOIS
 JASPER COUNTY, ILLINOIS

PROJECT PHOTOLOG

(APPENDIX F)





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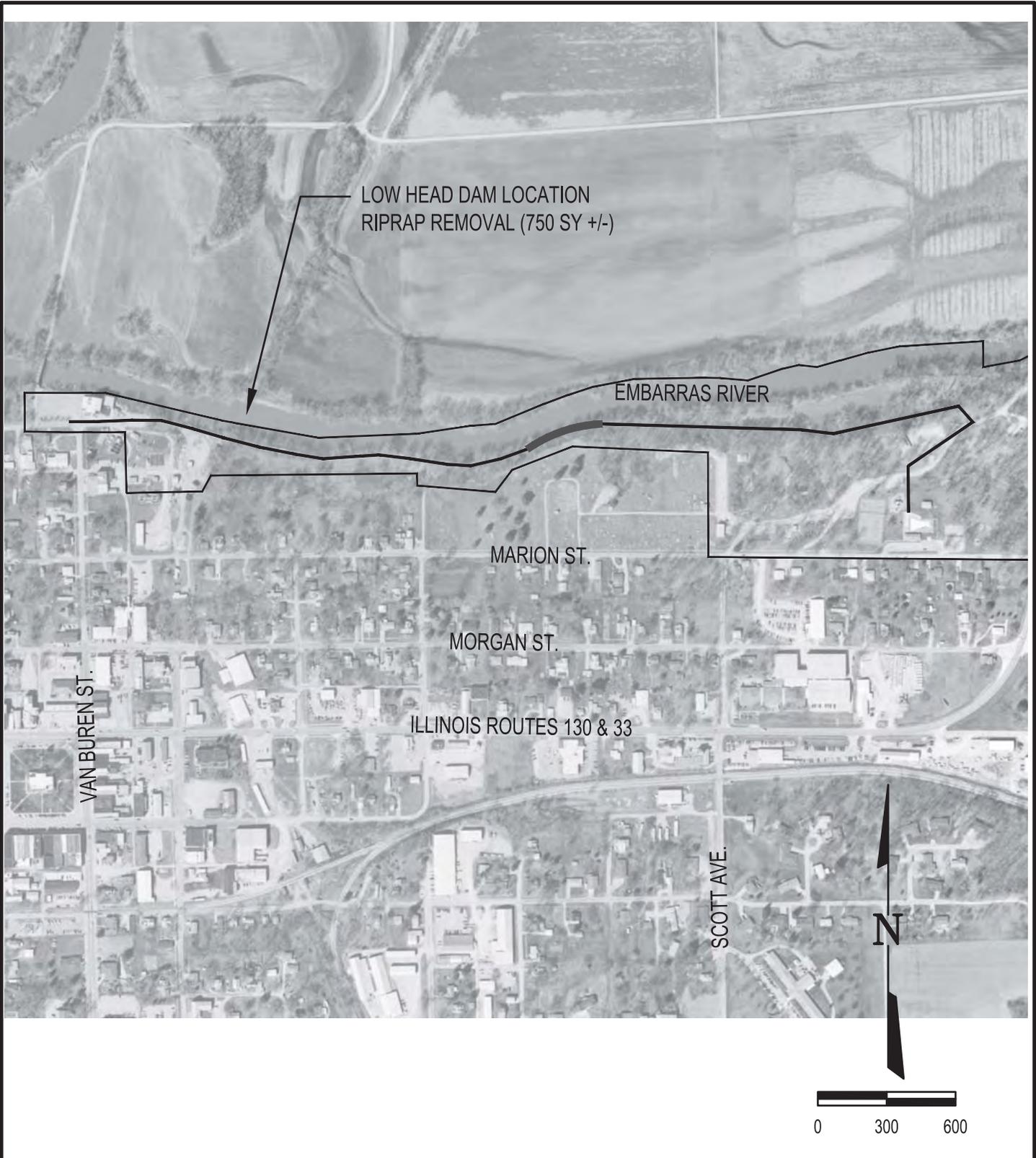
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LOWHEAD DAM LOCATION

(APPENDIX G)



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APPENDIX G
 LOWHEAD DAM LOCATION
 NEWTON BIKE TRAIL
 ITEP, 2016
 JASPER COUNTY, ILLINOIS