DeKalb County Highway Department

Incidental Take Authorization Application

Conservation Plan for Gravel Chub (*Erimystax x-punctatus*)

McNeal Road Bridge over the South Branch Kishwaukee River

Structure No. 019-4009




Prepared by:

BAXTER & WOODMAN Consulting Engineers

www.baxterwoodman.com

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LIST OF ABBREVIATIONS

FEMA	-	Federal Emergency Management Agency
IDNR	-	Illinois Department of Natural Resources
IDOT	-	Illinois Department of Transportation
IEPA	-	Illinois Environmental Protection Agency
USACE	-	United States Army Corps of Engineers
USFWS	-	United States Fish and Wildlife Service

1. INTRODUCTION

1.1 Project Description

DeKalb County is planning to replace the McNeal Road Bridge that crosses over the South Branch Kishwaukee River. To complete this action, an Incidental Take Authorization is needed from the Illinois Department of Natural Resources (IDNR) for construction activities that may potentially take gravel chub (*Erimystax x-punctatus*) individuals.

The McNeal Road Bridge (Structure No. 019–4009) is located over the South Branch Kishwaukee River approximately 0.3 miles east of County Line Road in Franklin Township, DeKalb County, Illinois. Franklin Township has concurred with DeKalb County that the bridge should be replaced. The bridge is located in the northwest quarter of Section 7, Township 42 North, Range 3 East in DeKalb County (Latitude 42.13777, Longitude -88.93325). The Franklin Township Road District maintains and has jurisdiction over McNeal Road. Ownership of the action area includes Franklin Township right-of-way. All work will be conducted within the existing right-of-way, therefore, no construction easements are needed outside the roadway right-of-way. Please refer to Exhibit A - Site Location Map. The Implementation Agreement in accordance with this Conservation Plan has been provided in Appendix B.

The two-lane bridge was constructed in 1978. It is a three-span, precast prestressed deck beam bridge with metal shell pile bent abutments and piers. The deck and superstructure show signs of serious deterioration and the bridge needs to be replaced. Bridge photographs are shown in Appendix A.

The proposed bridge will be a four-span, haunched concrete slab bridge. The bridge approaches will be reconstructed, but the proposed alignment and roadway profile will remain the same as existing to minimize impacts to adjoining wetlands and floodplain. The guardrails will be replaced.

Since the bridge will be constructed “in-the-dry” with cofferdams, the project will need to meet the temporary cofferdam requirements of the Illinois Environmental Protection Agency (IEPA) and U.S. Army Corps of Engineers (USACE).

1.2 Biological Data

The gravel chub (*Erimystax x-punctatus*) is listed as threatened under the Illinois Endangered Species Act (IDNR, 2019a). Several occurrences of the fish have been reported in the Kishwaukee River basin (Rivera, 2012, IDNR, 2019b). Two occurrences have been reported in DeKalb County (IDNR, 2018). The gravel chub has been observed at McNeal Road during IDNR sampling events in 1983 (1 fish collected), 1997 (1 fish collected), 2001 (1 fish collected), 2011 (4 fish collected) and 2016 (species observed) (Rivera, 2012; IDNR, 2019c).

The gravel chub is a slender fish with a round body that typically ranges between 2.5 and 3.5 inches long (IDNR, 2019d; Miller et. al., 2014; Becker, 1983). Sides and back are olive gray, green-yellow, silver or tan with distinctive X-, Y- and W- markings. The snout extends beyond the upper lip. A small, cone-shaped barbel is present at each corner of the mouth.

The gravel chub resides in medium-to-large streams and rivers and strongly prefers swift, deep, clear, unvegetated water with gravel substrate (IDNR, 2019c; Miller et. al., 2014; Becker, 1983). The gravel chub lives on or near the bottom. It spawns in spring over gravel riffles. The fish is an omnivore, consuming both plant materials (e.g., algae, detritus) and macroinvertebrates.

In Illinois, it is found in the Rock River, Wabash River, and Mississippi River basins (IDNR, 2019b; Power Engineers, 2008). It is occassionally observed in fish surveys within the Kishwaukee River system, a major tributary to the Rock River (Rivera, 2012; IDNR, 2019b). For the South Branch Kishwaukee River, the gravel chub has been observed at the McNeal Road sampling station on five different surveys between 1983 and 2016 (IDNR, 2019c).

The river habitat at McNeal Road is good for the gravel chub. The channel bottom substrate consists of 10 percent silt/mud, 30 percent sand, 30 percent gravel, and 30 percent cobbles (Rivera, 2012). Instream cover included boulders, submerged logs, submerged roots, debris-brush jams, and undercut banks.

A major threat to its existence is loss of habitat, especially the change of water quality or siltation over its gravel substrate habitat (Becker, 1983; Miller et. al., 2014; IDNR, 2019X; WDNR, 2019).

1.3 Description of the Activities That May Result in Taking

The existing two-lane, 27-ft wide, three-span bridge is proposed to be replaced with a two-lane, 27-ft wide, four-span bridge. The road will be closed during the bridge replacement. To construct the bridge, temporary cofferdams will be constructed around each pier to allow workers to remove and replace the bridge piers in dry conditions. The contractor will select the means and methods to construct the cofferdams, but the cofferdam design must be approved by the IEPA and USACE, in accordance with their temporary cofferdam requirements, prior to construction. For example, the cofferdam materials must be made of non-erodible materials, such as sheet piling.

The proposed bridge piers will occupy 208 square feet within the river channel. The proposed temporary cofferdams will occupy approximately 1,280 square feet within the river channel. The total impacts, both permanent and temporary, will total 1,280 square feet within the river channel.

The construction of the temporary cofferdams will proceed from the upland side of the shoreline with front-end loaders and track-mounted excavators. It is possible that some of the cofferdam can be constructed from the bridge with track-mounted excavators. Once the cofferdam is no longer needed, the cofferdam will be removed in reverse order. Starting at the riverward end of the

cofferdam, excavators will remove the cofferdam materials from the river and load trucks for removal from the site.

Cofferdams will center around each pier and the river will be allowed to flow around the coffered area.

1.4 Anticipated Adverse Effects on Listed Species

The cofferdams will temporarily occupy gravel chub habitat. It is possible the placement of cofferdam materials could directly strike a gravel chub, but the construction noise will likely keep any fish away from the construction zone.

Bridge construction noise and vibrations could also deter the fish from occupying potential habitat at the project site. The noise and vibrations against the steel structures and piers could permeate into the water column, which fish would naturally avoid and swim away.

At construction sites, soil particles can enter the water column due to erosive conditions and poor soil erosion and sediment control. Sediment can cover the rock substrate. Suspended soil particles can make the water more turbid. These conditions can adversely impact fish, including the gravel chub. The contractor will be required to follow best soil erosion and sediment control practices to minimize the loss of soil from the construction site.

2. MINIMIZATION AND MITIGATION MEASURES

2.1 Plans to Minimize Area, Estimated Number of Individuals That Will Be Taken, and Amount of Habitat Affected

The temporary cofferdams will be limited to the right-of-way. A causeway will not be needed to construct the cofferdams. The width of the cofferdams will be as narrow as possible to support construction equipment. The total amount of temporary disturbance of river habitat is 1,280 square feet.

An estimated two gravel chubs could be impacted as a result of the construction. Although the fish are not likely to be present near the work zone due to noise and vibrations and are likely to swim away from the cofferdam work, fish could be killed during the placement of cofferdam materials. Since gravel chub reportedly travel in small schools and sample surveys typically had one gravel chub (maximum of four chubs), two gravel chubs are estimated to be impacted. A loss of two fish would not jeopardize the Kishwaukee River population.

2.2 Plans for Management of the Area Affected That Will Enable the Continued Use of the Species

The river habitat will be restored to pre-construction conditions. There will be no long-term loss of available river habitat as a result of the proposed work. The only work in the river during construction will be the placement of the temporary cofferdams. Once work is completed, the temporary cofferdams will be removed and the river bottom restored to pre-construction conditions. After construction, the gravel chub is likely to re-populate suitable habitat near the bridge.

The County has added a streambank stabilization measure to its bridge replacement project. Since there are eroding riverbanks near the bridge abutments, rock toe stabilization is proposed within the right-of-way adjacent to the bridge abutments. The stabilization of the riverbanks from severe erosion will help limit the loss of soil and river siltation near the bridge, bolstering the river's ability to maintain suitable substrate for the gravel chub near the bridge.

Additional habitat improvement actions are described in Sections 2.3 and 3.3.

2.3 Description of All Measures to be Implemented to Minimize or Mitigate the Effects on the Species

Several actions are proposed to minimize or mitigate adverse effects to the gravel chub. First, cofferdams will only surround each pier, allowing water to pass freely under the bridge spans. This leaves habitat available for most of the channel width, minimizes flow disruptions, and allows for fish to traverse freely through the construction site.

During cofferdam installation, if fish are observed within the cofferdam, they will be removed prior to de-watering.

The work will be performed outside the gravel chub spawning season. The work is expected to occur between September 2019 and February 2020.

When the work is completed, the river habitat will be restored to pre-construction conditions. This includes the re-establishment of a sand/gravel channel bottom at the same elevations. No long-term loss of habitat is anticipated.

The bidding documents will include a Soil Erosion and Sediment Control Plan. The contractor is expected to follow this plan to minimize sediment disturbance and to keep any soil erosion/sediment on-site.

Mitigation Research Project Synopsis

Mitigation will be performed to the maximum extent possible as described above. Any additional mitigation or potential research will be coordinated with IDNR. At this time, IDNR is currently working with INHS and IDOT to develop a research proposal regarding the species.

Commonly employed community-based fish sampling is inefficient in capturing Gravel Chub, and so the species' status is poorly understood. The goal of this study is to use targeted sampling methods to assess status and identify habitat associations of Gravel Chub in Illinois. A nested sampling design and stratified random selection procedure for identifying sample reaches will permit estimates of Gravel Chub distribution and abundance and evaluation of habitat associations at multiple resolutions. This study will be used in future development of conservation guidance for the species.

2.4 Plans for Monitoring the Effects of Measures Implemented

During construction, the contractor and DeKalb County will monitor the Best Management Practices to control sediment and soil erosion. These inspections will occur prior to and after any river work and large storm events.

Following construction, the Illinois Natural History Survey, as directed by IDOT, will perform a fish survey of the project area in Year 2 and Year 5 after construction of the bridge.

2.5 Adaptive Management Practices

The following adaptive management practices to deal with changed or unforeseen circumstances that may affect the gravel chub are proposed:

1. If unforeseen construction situations occur, the County will consult with the IDNR and IDOT to make sure any corrective actions do not adversely impact the gravel chub. Potential adverse situations include flooding, equipment spills or leaks, and fuel spills.

a. Construction crews will monitor weather forecasts for heavy rain and flooding. If flooding is expected, all equipment will be moved out of the floodplain and construction work will be buttoned up to withstand higher flows. The temporary cofferdams are expected to withstand any higher flows due to the limited height.

b. The release of fuels and other construction pollutants could adversely impact fish. To protect the waterways, all equipment fueling will take place at a designated location away from wetlands and the river. This location will have spill response materials to clean up any accidentally spilled fuels or equipment leaks.

2. Construction workers will be informed of sensitive resources in the area, including threatened and endangered species, regulations protecting the species, where the species might be found, equipment avoidance areas, how to report sightings or incidents that may involve take, and the importance of avoiding take of the species. If any threatened or endangered species are encountered, actions will be taken to avoid impacting these species. The IDNR will be consulted on the best methods to continue work. Finally, the status report will include a map and GPS coordinates of any listed species found within the project footprint, a description of any relocations, injuries or mortalities, and the disposition of any individuals that were injured or killed.

2.6 Funding

This project will be funded jointly using federal funds (administered through IDOT) and County funds. IDOT and the County have both included this project in their FY19 capital improvement plans. There are line items specifically for this project in the FY19 budgets.

3. ALTERNATIVE ACTIONS

In addition to the proposed action, the County examined alternative actions to replace the McNeal Road Bridge.

3.1 Work from Bridge and Upland Areas

Under this alternative, no equipment would be placed in the river. The bridge piers and decking would be removed and replaced with equipment set on upland areas or the bridge. This alternative is not feasible since the bridge is not structurally sound and the piers too far from shore for this type of work. This is not a feasible alternative.

3.2 Road Closure

The Township and County could decide to permanently remove the bridge and close the road at the river crossing. The bridge would be removed prior to the eventual structural collapse and failure, avoiding a messy cleanup in the river. Cul-de-sacs could be placed on either side of the river to allow for vehicle turnarounds.

This alternative was not considered because it would force McNeal Road traffic to follow long detours. The closest river crossings are approximately 1 mile to the northwest and 3 miles to the southeast. The increase in travel times, especially to emergency vehicles, is not acceptable to the Township and County.

3.3 Habitat Projects

The sand-gravel-cobble channel bottom substrate at McNeal Road Bridge is suitable for the gravel chub, as evidenced by the collection of this fish species in recent surveys. Within or near the bridge, there does not appear to be suitable areas to increase the gravel chub habitat by adding gravel-cobble habitat.

The gravel chub is adversely impacted by siltation. The riverbanks near the bridge show signs of erosion. The riverbanks are near vertical with no vegetation on the bank faces, subject to erosion during high flows.

3.4 Three-Span Bridge

Three-span bridge layouts were considered, but the necessary span lengths could not be achieved with the proposed structure type. Other structure types would have required an unacceptable raise to the roadway profile.

3.5 Fish Stocking

Fish stocking was considered but dismissed since there is not a fish hatchery that commercially produces the local genotype of the gravel chub.

3.6 No Action

Under the no action alternative, the bridge would not be replaced. The bridge would continue to deteriorate, eventually causing the Township and County to close the road before it collapses. All McNeal Road traffic would have to be re-routed following a long detour. This would drastically increase travel times for emergency and other vehicles, beyond a level-of-service that the Township and County could tolerate.

4. IMPACT ON LIKELIHOOD OF SURVIVAL

The proposed action will not reduce the likelihood of the survival of the gravel chub in the wild in Illinois, the biotic community to which the gravel chub belongs, or the habitat essential for the species existence in Illinois.

4.1 Distribution and Habitat

As described in Section 1.2, the gravel chub resides in medium-to-large streams and rivers and strongly prefers swift, deep, clear, unvegetated water with gravel substrate. It is found in the Rock River (including South Branch Kishwaukee River), Wabash River, and Mississippi River basins.

For the South Branch Kishwaukee River, the gravel chub has been observed at the McNeal Road sampling station on five different surveys between 1983 and 2016 (IDNR, 2019c). The gravel chub has been observed at McNeal Road during IDNR sampling events in 1983 (1 fish collected), 1997 (1 fish collected), 2001 (1 fish collected), 2011 (4 fish collected) and 2016 (species observed) (Rivera, 2012; IDNR, 2019c).

4.2 Proposed Work

The potential loss of individual gravel chubs as a result of the proposed work is estimated at two individuals. Based on 2011 sampling, the gravel chub regularly occurs in the Rock River but sparingly occurs in the South Branch Kishwaukee River. The bridge is approximataely 10 miles from the Rock River. A potential loss of two individuals would not likely result in adverse impacts to the gravel chub population in the Kishwaukee and Rock River basins.

With a wide range of habitat across Illinois, any incidental take at the project site will not impact the statewide population of the gravel chub. The proposed project work will be kept to a minimum footprint, so fish populations outside of this area will not be effected.

With populations in the Kishwaukee River and Rock River, recruitment of gravel chubs to the project site to occupy suitable habitat is likely.

The loss of habitat due to cofferdam construction would be temporary. During cofferdam removal, the river bed would be restored to pre-construction conditions (similar elevations and sand/gravel substrate). Therefore, river habitat conditions would be similar before and after construction.

The proposed work would also include rock toe stabilization of the river bank within the right-of-way. This would help minimize siltation in the river.

5. REFERENCES

Becker, G.C, 1983. Fishes of Wisconsin. University of Wisconsin Press.

Illinois Department of Natural Resources, 2018. Illinois Threatened and Endangered Species by County. Illinois Natural Heritage Database, July 23, 2018.

Illinois Department of Natural Resources, 2019a. Endangered Species Protection Board information from website https://www.dnr.illinois.gov/ESPB/Pages/default.aspx.

Illinois Department of Natural Resources and Illinois Natural History Survey, 2019b. Gravel Chub Distribution Map, undated. Downloaded from website on January 25, 2019: https://www.dnr.illinois.gov/conservation/IWAP/Documents/FishMaps/GVC.pdf.

Illinois Department of Natural Resources, 2019c. Natural Heritage Database Information provided by T. Kieninger, January 2019.

Illinois Department of Natural Resources, 2019d. Gravel Chub Fact Sheet from website https://www.dnr.illinois.gov/education/CDIndex/GravelChub.pdf.

Miller, M., K. Songer and R. Dolen, 2014. Field Guide to Wisconsin Streams. University of Wisconsin Press.

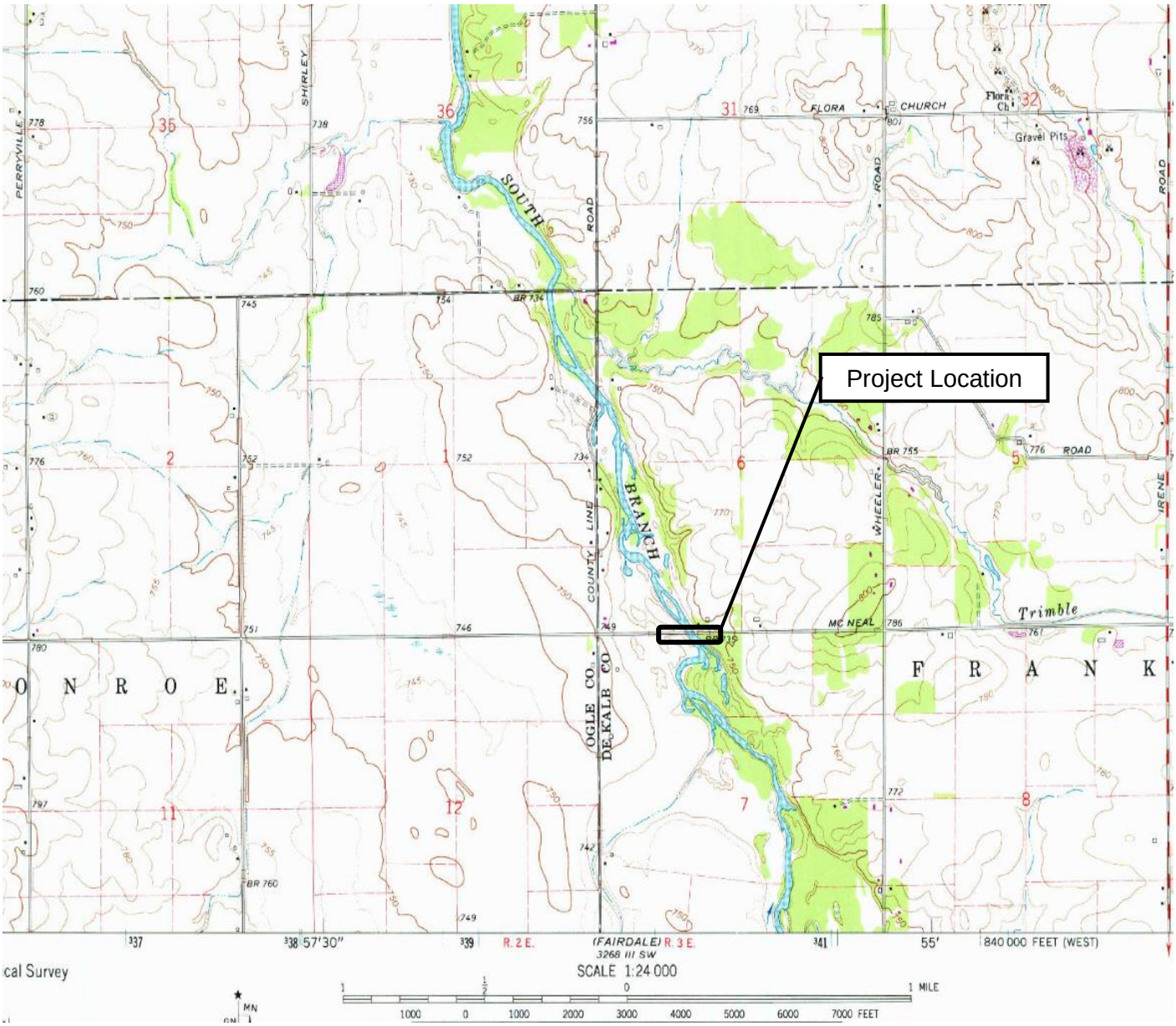
Power Engineers, 2008. Conservation Plan, Baldwin-Rush Island Interconnection Project, AmerenIP.

Rivera, K., 2012. Fish Assemblages and Stream Conditions in the Kishwaukee River Basin: Spatial and Temporal Trends, 2011 - 2011. Illinois Department of Natural Resources.

Smith, P.W., 2002. The Fishes of Illinois. University of Illinois Press.

Wisconsin Department of Natural Resources, 2019. Gravel Chub information from website https://dnr.wi.gov/topic/EndangeredResources/Animals.asp?mode=detail&SpecCode=AFCJB50050.

EXHIBIT A



USGS Topographic Map

Cherry Valley Quadrangle

McNeal Road over South Branch Kishwaukee River

DeKalb County

Section No. 13-05119-01-BR

APPENDIX A

PHOTOGRAPHS

McNeal Road at South Branch Kishwaukee River – Looking east at bridge deck (October 2018).

McNeal Road at South Branch Kishwaukee River – Looking west at bridge deck (October 2018)

McNeal Road at South Branch Kishwaukee R. – South elevation looking northeast (Oct 2018).

McNeal Rd at South Branch Kishwaukee R. – Northwest elevation looking southeast (Oct 2018)

McNeal Rd at South Branch Kishwaukee R. – Looking southwest at west abutment (Oct 2018)

McNeal Road at South Branch Kishwaukee R. – Looking southeast at substructure (Oct 2018)

McNeal Rd at South Branch Kishwaukee R. – Northeast elevation looking southwest (Oct 2018)

McNeal Rd at South Branch Kishwaukee River – Looking south at east abutment (Oct 2018).

McNeal Rd at South Branch Kishwaukee River – Looking southwest at substructure (Oct 2018).

Looking southeast (upstream) from McNeal Road bridge (September 2018).

Looking northwest (downstream) at east bank and river (September 2018).

APPENDIX B

IMPLEMENTATION AGREEMENT

BAXTER & WOODMAN Consulting Engineers

Implementation Agreement
McNeal Road Bridge over the South Branch Kishwaukee River
Franklin Township, DeKalb County, Illinois

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

This Conservation Plan will be implemented by the DeKalb County Highway Department and their duly authorized representative has signed below committing to the execution of this Conservation Plan as a part of the project.

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 IDNR;

The DeKalb County Highway Department is solely responsible for completing this project through its designated consultants and contractors.

Construction start date: Fall 2019 / Spring 2020

Construction completion date: Late Summer/Fall 2020

IDNR will be notified of the time/location of the preconstruction meeting, the start of construction, and the completion of construction. Progress reports will be provided quarterly during construction.

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;

DeKalb County Highway Department hereby certifies that it has the authority and funding to complete the project and to implement all proposed conservation measures included in the Conservation Plan for the Gravel Chub.

D) Assurance of compliance with all other federal, State and local regulations pertinent to the proposed action and to execution of the conservation plan;

The DeKalb County Highway Department is in charge of construction and will assure that all applicable state, federal, and local laws will be adhered to during the completion of the project.

E) Copies of any final federal authorizations for a taking already issued to the applicant, if any.

No federal permits for Take have been issued.

DATE: 6/11/2019

Nathan Schwartz, P.E. – County Engineer, DeKalb County Highway Department