ILLINOIS ROUTE 23
OVER THE COON CREEK
McHENRY COUNTY

Marked Route: FAP 324
Job: P-91-116-09
Structure No. 056-0012 (Existing)
056-0277 (Proposed)

INCIDENTAL TAKE SUBMITTAL
FOR THE STATE THREATENED SPECIES
IOWA DARTER (*Etheostoma exile)*
and
SPIKE MUSSEL *(Elliptio dilatata)*

MARCH 2010

ILLINOIS DEPARTMENT OF TRANSPORATION
District 1
201 West Center Court
Schaumburg, IL 60196

Incidental Take Submittal
For the State Threatened Species
Iowa Darter (*Etheostoma exile*)
and
For the State Threatened Species
Spike Mussel (*Elliptio dilatata*)

Conservation Plan

1) Description of the Impact likely to result in the proposed taking

A) Introduction and Legal Description of Project Area

The project is for the reconstruction of Illinois Route 23 (IL 23) bridge over Coon Creek (Structure No. 056-0012) located in unincorporated McHenry County, approximately 5 1/2 miles south of the City of Marengo. The structure is located on IL 23 (FAP 324) in the southwest quarter of Section 26 of T43N, R5E at latitude 42˚-10'-13" N, longitude -88˚-37'-13" W. A U.S.G.S. topographic map indicating the project location is attached.

The project is for the complete removal and replacement of the existing IL 23 bridge over Coon Creek. The original four-span structure was built in 1929. The structure was widened in 1969, at which time the superstructure was replaced with a new precast, prestressed concrete (PPC) deck beam superstructure. The horizontal alignment was moved 10' to the west (towards the inside of the curve), thereby only requiring the roadway and bridge to be widened toward one direction. The substructure currently consists of closed abutment walls and three solid wall piers in the waterway.

The bridge is currently load posted and needs to be replaced. The superstructure consists of 40-year old PPC deck beams that are rated in critical condition. The substructure is in fair condition and has portions dating back to 1929, which would not be expected to survive the design life of the proposed superstructure. Additionally, the existing bridge does not meet the hydraulic clearance or freeboard criteria.

The proposed structure is a three-span bridge with open abutments and two solid wall encased pile piers in the stream. The abutments will be placed at the top of a 2:1 embankment slope and located approximately 14' behind the existing closed abutment walls. The proposed piers will be located between the two outside existing piers. The roadway will be reconstructed for 600' each side of the bridge for a total reconstruction length of 1200'. The profile will be raised approximately 3' at the bridge to meet the hydraulic clearance and freeboard criteria. The

existing alignment will be relocated back to the original 1929 alignment, approximately 10' towards the east at the bridge. No additional lanes will be constructed, but the roadway realignment will require additional embankment on the east side of the roadway.

The realignment of the road and resulting embankment addition will not affect adjacent wetlands. The sideslopes of the embankment were designed at 2:1 with guardrail protection near the bridge. This design meant that no additional right-of-way was required and allowed for the avoidance of wetland impacts.

The existing piers will not be completely removed but will instead be sawed off above the footing, leaving the below streambed portions of the piers in place. The pier removal and construction will involve in-stream work. A pile driver will be required on a temporary causeway. Additional riprap will be required at the pier and abutment removal areas and on the new abutment slopewalls.

The overall in-stream work for pier construction is considered a short term operation and shall be scheduled at the beginning or end of the construction timeframe to avoid the spawning season of the Iowa darter.

The property located within the road and bridge right-of-way is owned by the Illinois Department of Transportation (IDOT). The adjacent property is owned by private landowners.

B) Biological Data on the Species

Iowa darter (*Etheostoma exile*)

Iowa darter (*Etheostoma exile*) is listed as a State Threatened Species by the Illinois Department of Natural Resources (IDNR) on the current (2009) Endangered and Threatened Species List. The 2008 survey data provided by the Illinois Natural Heritage Database reports the fish present within the county as of October 10, 2007 (http://www.dnr.state.il.us/espb/08/et_county_dec2008.pdf).

According to the IDNR Wetland Impact Review Tool report, the Iowa darter was observed 0.25 mile south (upstream) of the IL 23 bridge over Coon Creek in August 1993.

The fish typically inhabits vegetated lakes, pools of headwaters, creeks, and small rivers (Page and Burr, 1991). Rook reports that the fish's habitat consists of clear, sluggishly vegetated streams and weedy portions of glacial lakes, marshes, and ponds (Rook.org). Fredrick Copes reports that the fish prefers a mud bottom (Copes, 1986) while Beckman reports that the fish preferred colder streams and lakes with sandy bottoms (Beckman, 1952). This species is a darter of more northern ranges and prefers colder water (Beckman, 1952).

The range of the Iowa darter occurs between Saskatchewan to Quebec and

southward to Colorado, Iowa, Illinois and Ohio (Eddy and Surber, 1947). Fishbase.org further clarifies it has occurring in St. Lawrence-Great Lakes, Hudson Bay and Mississippi basins from southern Quebec to northern Alberta in Canada and south to Ohio, Illinois, and Colorado in the U.S.

Populations in the United States are in jeopardy due to agricultural development and urbanization. Fishbase.org suggests that the species has declined because of habitat reduction due to forest clearing and drainage practices, which have reduced habitat and warmed the remaining waters. The IDNR states that this species is threatened due to habitat degradation, including pollution, drainage of wetlands, and introduction of nonnative species (Nyboer, R.W., et al; 2006). Fishbase.org reports that the Iowa darter is now only abundant in non-agricultural areas. The IDNR states that this species is presently known in only a few locations and continued urbanization will pressure existing populations (Nyboer, R.W., et al; 2006).

Iowa darter's feed on drift organisms and invertebrates that are associated with aquatic vegetation, including midge larvae, mayfly larvae, and amphipods (Rook.org).

The Iowa darter is reported to spawn in sandy areas or beneath stream banks in April and May (Rook.org). Typical spawning times are April 1st through June 30th, although Fredrick Copes reports that spawning can be extended to July 25 (Copes, 1986).

Spike mussel (*Elliptio dilatata*)

Spike mussel (*Elliptio dilatata*) is listed as a State Threatened Species by the IDNR on the current (2009) Endangered and Threatened Species List. The 2008 survey data provided by IDOT reports the mussel was present within the county as of August 3, 2007. According to the IDNR Wetland Impact Review Tool report, the spike mussel was observed August 3, 2007 at the IL 23 bridge over Coon Creek.

The spike mussel inhabits small to large streams, and occasionally lakes. They are usually found in sandy or gravel substrates, and are often found associated with riffles. This mussel is a filter feeder and feeds on algae, zooplankton, and debris filtered from the water column. Suitable habitat for fish host species must be present for successful reproduction. Distribution has been reduced as a result of non-point source pollution; changes in flow regimes due to increased stormwater runoff, dams, or channelization; urban pollutants; improperly managed agriculture; excess nutrients; or siltation.

Host species for the spike mussel are black crappie (*Pomoxis nigromaculatus*), white crappie (*P. annularis*), flathead catfish (*Pylodictis olivaris*), yellow perch (*Perca flavescens*), sauger *(Sauger Canadensis*), and gizzard shad (*Dorosoma*

cepedianum) (http://www.gpnc.org/Spike.htm).

The spike mussel is a short-term breeder; fertilized eggs are brooded up to three months. Gravid females have been found from April through September. Once released, the larvae attach to the fish host species and remain for a period of a few days to several weeks.

The spike mussel has a widespread but sporadic distribution throughout the eastern United States. In the Midwest, it is found within the entire Mississippi River and Great Lakes drainage systems.

C) Description of the Activities That May Result in Taking

The potential for take would come from activities associated with the construction of a new bridge over Coon Creek. These activities consist of the removal of three bridge piers, the placement of two bridge piers, and embankment work.

D) Explanation of the Anticipated Adverse Effects on the Listed Species

The anticipated adverse effects include:

1) Short term erosion and sedimentation during construction may impact water quality.

2) There is a potential for either the Iowa darter or spike mussel to be crushed by the operations necessary to divert the water for the excavation area. This will be accomplished by the uses of timbers, sheet piling, granular embankment, non erodible barrier material, or other structural elements adequate to protect and support the excavation.

3) Short term disturbances due to increased noise and activities during construction would occur.

4) Continued degradation of habitat associated with surface runoff and salt spray from the bridge deck. This impact is minimal compared to surrounding agricultural runoff.

2) Measures to Minimize and Mitigate the Impact

A) Plans to minimize the area, estimated number of individuals that will be taken, and the amount of habitat affected.

Minimization of impacts to the Iowa darter will occur through the timing of the construction. The project is scheduled to begin in the Fall of 2010. The construction will be performed in two stages. Stage I Construction will construct the northbound direction, building up the widened portion towards the east (embankment, etc.) Stage II, which is likely to occur in Summer/Fall 2011, will complete the southbound direction. The overall in-stream work for pier removal and construction is a short term operation and will be scheduled at the beginning or end of the construction timeframe in order to avoid the spawning season of the Iowa darter (April 1 – June 30). Measures will be taken to avoid any substructure construction work during the spawning season.

During construction, the piers will be installed by diverting the water for the excavation by the uses of timbers, sheet piling, granular embankment, non erodible barrier material, or other structural elements adequate to protect and support the excavation. The protection need not be watertight. During these operations, sediment control silt curtains will be used to minimize any sedimentation that enters the water, thereby reducing water quality impacts and potential impacts to the Iowa darter or spike mussel.

Water quality impacts will be further minimized through the use of erosion and sediment control during construction. Current erosion and sediment control technologies will be used during construction, following IDOT specifications. These will include the use of silt fence on the ditch foreslopes to minimize runoff into the channel during construction. Erosion and sediment control inspections will occur weekly, and following a 0.5” rainfall. The construction contractor will be required to repair any deficiencies noted within one week. If it is determined that the design of the erosion and sediment control is insufficient, a new design will be implemented. Additionally, any conditions placed by the U.S. Army Corps of Engineers’ and/or the State of Illinois permits for the protection of water quality will be strictly followed.

The existing piers will not be completely removed but will instead be sawed off above the footing, leaving the below streambed portions of the piers in place. This will minimize the disturbance of creek sediments.

Minimization of impacts to the spike mussel will accomplished by having the Illinois Natural History Survey conduct a mussel survey prior to construction. All mussels will be relocated to outside of the construction zone at that time.

Water quality impacts from construction will be minimized due to the design of the project. The limits of construction include a very small area within the Coon

Creek watershed. Adjacent roadwork will occur for a distance of no more than 750 feet in either direction. The proposed limits of construction represent the minimum area necessary in which to work and construct the new crossing over Coon Creek. The footprint of the project has avoided wetland impacts due to increasing or tightening the slope of the roadway embankment to 2:1. This design factor results in the avoidance of wetland impacts and therefore allows for the maximum amount of wetland available to filter runoff from the roadway. It is anticipated that any temporary haul road or temporary causeway will not impact the wetlands.

The measures discussed above will reduce the amount of habitat that is affected to a minimal amount. Permanent loss of Iowa darter and spike mussel habitats are restricted to the area of the piers.

In-stream construction activity will be limited to approximately 75 feet upstream and downstream of the project.

The measures discussed above will reduce the amount of habitat that is affected to a minimal amount. Permanent loss of mussel habitat will be restricted to the area of the two pier footings.

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

The property and habitats of the area in question are partially under private ownership. The private ownership of this property prevents the development of active management plans. Any bare areas that have resulted from construction will be re-seeded with native plant species.

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

Below is a summary of the avoidance and minimization efforts described in Section 2A above. No compensatory mitigation is proposed.

Construction

1) Timing of the construction will minimize impacts. The in-stream work for pier construction will be scheduled at the beginning or end of the construction timeframe in order to avoid the spawning season of the Iowa darter. The construction work will not occur during the April 1st through June 30th spawning season.

2) The Illinois Natural History Survey will conduct a mussel survey prior to construction. All mussels will be relocated to suitable habitat outside of the construction zone at that time.

3) Erosion and sediment control technologies will be used to minimize impacts. These will include the use of silt fence on the ditch foreslopes to minimize runoff into the channel during construction. Erosion and sediment control inspections will occur weekly, and following a 0.5" rainfall.

4) The proposed limits of construction represent the minimum area necessary in which to work and construct the new crossing over Coon Creek.

5) During construction, any Iowa darters that are located within the project vicinity are expected to avoid the area because of the noise associated with construction activity.

Post-Construction

1) Areas of temporary impacts, including wetlands and uplands, will be re-vegetated using native plants species.

D) Plans for Monitoring the Effects of Measures Implemented

There are no current plans for monitoring Coon Creek. Monitoring has the potential to result in harm to the species through the damage of habitat in the monitoring area. Efforts needed to find specimens of the Iowa darter and/or spike mussel could result in the trampling of vegetation or crushing of substrate. Additionally, the Iowa darter is secretive and hides amongst the vegetation, making detection difficult. Studies would be hampered by this behavior.

E) Adaptive Management Practices That Will Be Used to Deal With the Changed or Unforeseen Circumstances That Affect the Effectiveness of Measures Instituted to Minimize or Mitigate the Effects of the Proposed Action on the Species.

In addition to items described in Section 2A and 2C above, IDOT's Bureau of Design and Environment Manual will be used. This Manual utilizes the latest techniques in sediment and erosion control design and implementation. Erosion and sediment control inspections will occur weekly, and following a 0.5" rainfall. The construction contractor will be required to repair any deficiencies noted within one week. If erosion and sediment control appears to be insufficient, corrections in the field will be made.

F) Verification That Adequate Funding Exists to Support and Implement All Mitigation Activities Described In the Conservation Plan.

This project is authorized by IDOT, which receives funding from Illinois General Assembly and the Federal government in carrying out its programs.

3) A description of alternative actions the applicant considered that that would not result in take and the reasons that each of those alternatives was not selected. (A "no-action" alternative shall be included in this description of alternatives.)

Various bridge types and configurations were evaluated in an attempt to minimize impacts. The three-span option was chosen because it minimizes the amount of in-stream work necessary. The option of reusing the existing pier is not feasible due to the age and condition of the existing pier. The option of a single span (no pier) does not provide enough freeboard above the water surface. The option of a two-span bridge was explored, however this would have required the complete replacement of the existing middle pier, which would result in disruptions to the streambed during the removal of the existing foundation.

In order to minimize wetland impacts and thereby minimize long-term water quality impacts, the design includes 2:1 sideslopes protected by guardrail. This avoids the necessity to obtain additional right-of-way and minimizes the amount of fill required that would impact wetlands.

Several alternative bridge designs were addressed in the early stage. The bridge design chosen was chosen for the fact that it resulted in the least amount of environmental impacts. Design standards require that the bridge have sufficient clearance to clear the high water elevation which results from a 50-year storm event. Based on this clearance, a minimum height of the beams and number of spans was chosen in order to reduce the amount of earthwork that would be needed on the approach and the abutments of the streambank. By minimizing the earthwork needed on the approach and the abutments, environmental impact to the stream and adjacent wetlands were avoided and/or minimized.

Relocation of the IL 23 bridge for a crossing of the Coon Creek at another location would not be practical or economically reasonable. Introducing a new stream crossing would result in more extensive environmental impacts.

The No-Action alternative is not practical. The superstructure of the IL 23 bridge is rated in critical condition and must be replaced. The substructure is currently in only fair condition and would not survive the design life of the new superstructure. In addition, the existing bridge does not meet hydraulic clearances, freeboard criteria, and IDOT design criteria.

4) Data and information to indicate that the proposed taking will not reduce the likelihood of the survival in the wild, the biotic community of which the species is part of, or the habitat essential to the species' existence in Illinois.

The project will have minimal impact on the surrounding ecosystem. The project will result in the removal of a minimal amount of Iowa darter or spike mussel habitat, the amount being that of the substructure of the new bridge.

The project will not impact wetlands, which will allow the wetlands adjacent to the project area to continue to filter stormwater runoff from the roadway prior discharge into Coon Creek. The wetlands associated on the road side and adjacent to the creek will continue to act as filters to stormwater prior to its entering the creek.

It is anticipated that a temporary haul road and/or temporary fill adjacent to the bridge will be required for the construction of a temporary causeway and the bridge. This roadway will not result in any impacts to wetlands adjacent to Coon Creek.

No new long term ecosystem impacts will result because the project is the replacement of an existing structure and existing conditions will be maintained. It is unlikely that the temporary and permanent corridor impacts to the wetland habitats or water quality will jeopardize the continued existence of either the Iowa darter or the spike mussel in Illinois.

The project will have minimal impact on the surrounding ecosystem. The proposed piers will result in the removal of approximately 0.006 acres of habitat; this small amount is not expected to cause an effect because sufficient habitat is located adjacent to the bridge. Additionally, the Illinois Natural History Survey will conduct a mussel survey prior to construction. All mussels will be relocated to suitable habitat outside of the construction zone at that time. It is therefore anticipated that no take will occur. Temporary, short term water quality impacts will be minimized through the use sediment control silt curtains during pier installation and silt fencing during roadway work. No new long term ecosystem impacts will result because the project is for the replacement of an existing bridge and existing conditions will be maintained.

5) An implementing agreement, which shall include, but not be limited to:

A. Names of all participants in the execution of the conservation plan

Tom Brooks
Biological Resource Unit Manager
Illinois Department of Transportation

Susan Dees
Biological Resources Specialist
Illinois Department of Transportation

Kevin Cummings
Malacologist
Illinois Natural History Survey

B. The obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities in the conservation plan and a schedule for preparation of progress report to be provided to the Department.

IDOT, or the Resident Engineer assigned to the construction, will ensure that erosion and sediment control is maintained in good working condition. Inspections will occur weekly, and following a 0.5" rainfall. IDOT will ensure that any deficiencies noted in the erosion and sediment control will be repaired within one week. If it is determined that the design of the erosion and sediment control is insufficient, a new design will be implemented. Additionally, any conditions placed by the U.S. Army Corps of Engineers or the State of Illinois' permits for the protection of water quality will be strictly followed.

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.

The bridge is owned and the project is an undertaking by IDOT. IDOT has the legal authority to conduct the work and accepts the responsibility of adhering to minimization and conservation measures described within this document.

D. Assurances of compliance with all other federal, state, and local regulations pertinent to the proposed action and to execution of the conservation plans.

IDOT abides by the National Environmental Policy Act and all associated state and federal environmental laws in carrying out its mission of performing the most environmentally sensitive methods of transportation planning and engineering.

IDOT will apply for any Section 404 Clean Water Act permits from the U.S. Army Corps of Engineers, as well as the applicable State of Illinois Section 401 Clean Water Act permit and the Illinois Department of Natural Resources, Office of Water Resources' permit for work in a floodway. IDOT will adhere to all permit conditions. It is anticipated that permit conditions will include erosion and sediment control and other minimization measures.

E. Copies of any federal authorizations for taking already issued to the applicant.

The Iowa darter and spike mussel are state threatened species and not federally protected species. No federal authorization is required.

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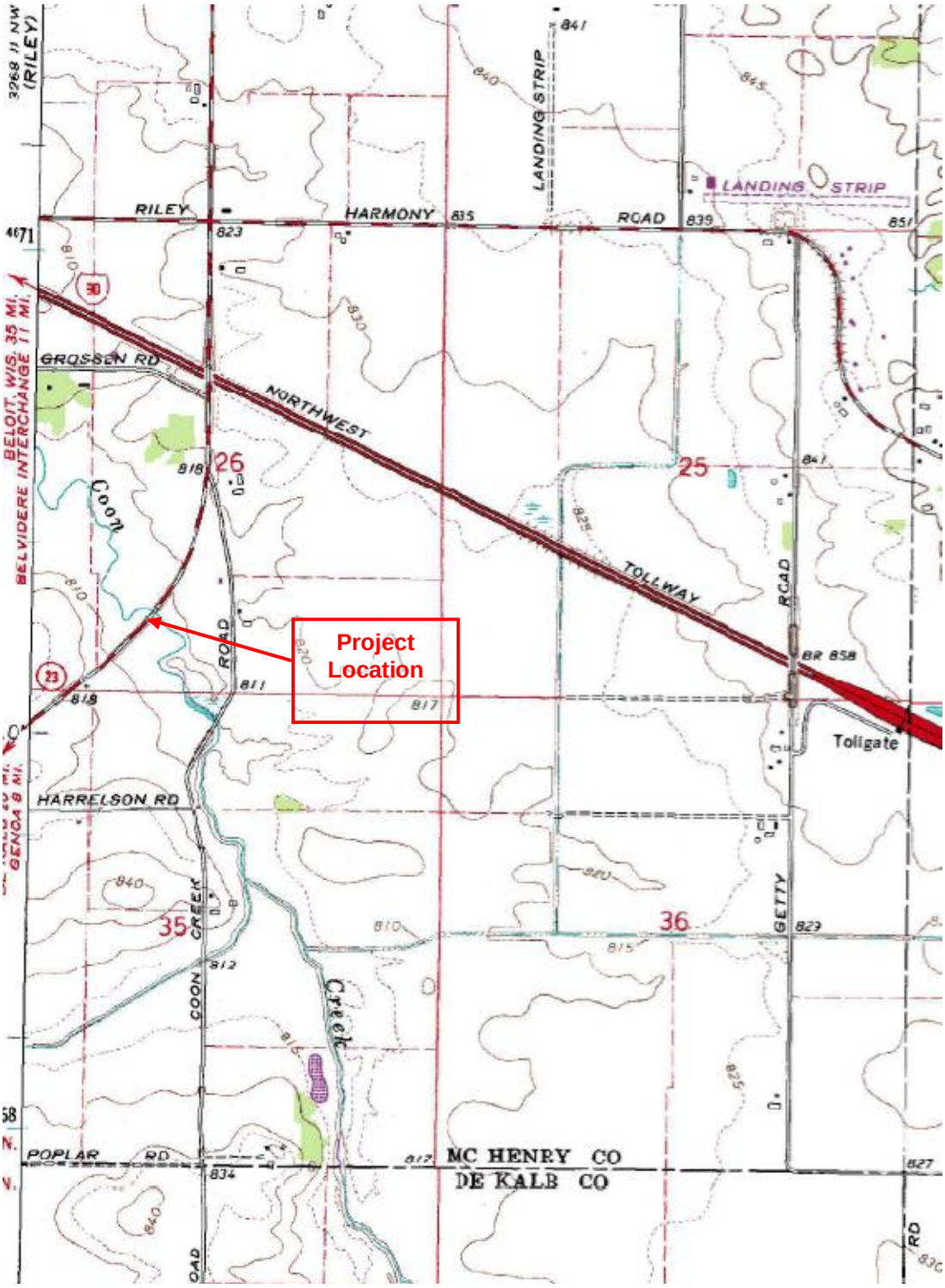

Project Location Map: U.S.G.S. topographic map; Marengo South Quadrangle

Illinois Route 23 over Coon Creek
Illinois Department of Transportation